

# Genesee Generating Station

Units 4 & 5

Project Description

Canadian Environmental Assessment Agency

November 2013



# Project Description for Capital Power's Proposed Genesee Generating Station (GGS) Units 4 and Unit 5

## GENERAL INFORMATION

Capital Power Generation Service Inc. (Capital Power) is pleased to provide this Project Description for the proposed Genesee Generating Station (GGS) Units 4 & 5 Project (the Project). This Project Description has been prepared in accordance with the *Prescribed Information for the Description of a Designated Project Regulations* and the *Guide to Preparing a Description of a Designated Project under CEAA 2012* and has been organized to follow the topic headings as described therein.

### 1. The project's name, nature and proposed location.

Capital Power is proposing to expand its existing Genesee Generating Station (GGS) by constructing and operating a natural gas-fired power plant to meet expected increases in Alberta's power requirements, arising both from continued economic growth in the Province and from the expected retirements of existing coal generating units in the 2020 timeframe. The Project will be situated adjacent to the existing GGS (Units 1 to 3) approximately 17 kilometres north of the Town of Warburg in Leduc County (Figure 1). The Project is located within Section 25, Township 50, Range 3, west of the 5<sup>th</sup> Meridian and is expected to occupy about 5 hectares of previously disturbed land (i.e., a brownfield site) owned by Capital Power (Figure 2). GGS has been operating at this site since 1989. The existing three units burn coal from the nearby Genesee Coal Mine to produce electricity. Units 1 and 2 of the GGS each have a nameplate capacity of 410 MW gross, and Unit 3 has nameplate capacity of 495 MW gross. The proposed Project would increase the electrical output of the GGS to by approximately 80% (up to an additional 1050 MW gross) for a combined total gross nameplate capacity of up to 2365 MW at the Genesee site.

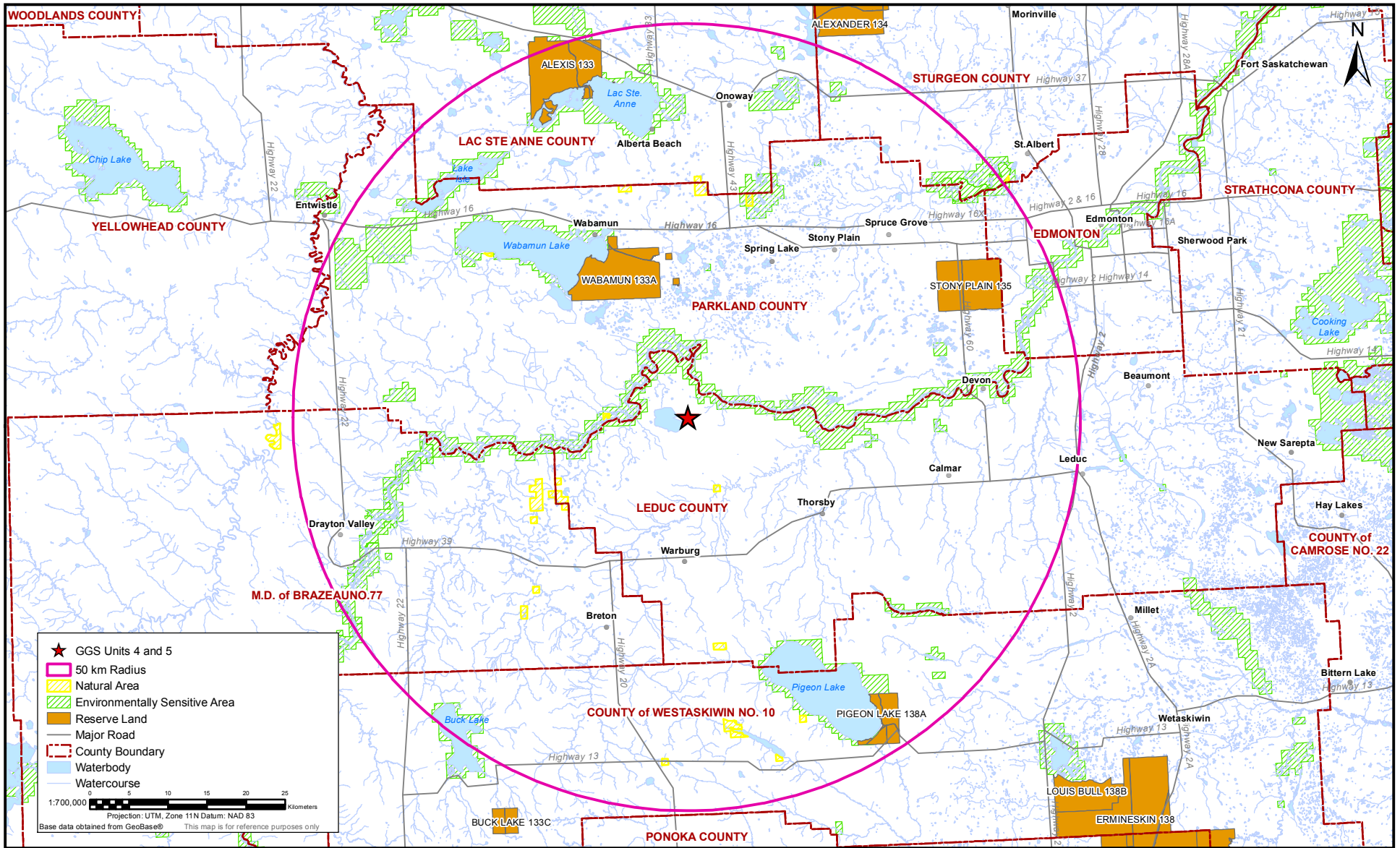
### 2. The proponent's name and contact information and the name and contact information of their primary representative for the purpose of the description of the project.

Proponent	Project Contact
Mr. Brian Vaasjo President and Chief Executive Officer Capital Power Corporation 12 <sup>th</sup> Floor EPCOR Tower 10423-101 Street Edmonton, Alberta T5H 0E9	Jennifer Lowry Senior Advisor, Public Consultation Toll Free: (Alberta) 1-866-348-3946 Local: 780-848-8474 Fax: 780-392-5124 Email: <a href="mailto:publicconsultation@capitalpower.com">publicconsultation@capitalpower.com</a>

### 3. A description of and the results of any consultations undertaken with any jurisdictions and other parties including Aboriginal peoples and the public.

Consultation with Aboriginal groups (i.e., First Nations and Métis) and the public will be formally initiated in Q4 2013. Capital Power has identified the Project in its bi-monthly community newsletter for regional stakeholders. The newsletter is also posted on the corporate website. In addition, the Project has also been referenced in several news reports in the Edmonton Journal.

Capital Power has consulted with the Alberta Utilities Commission (AUC) and Alberta Environment and Sustainable Resource Development's (ESRD) Industrial Approvals and



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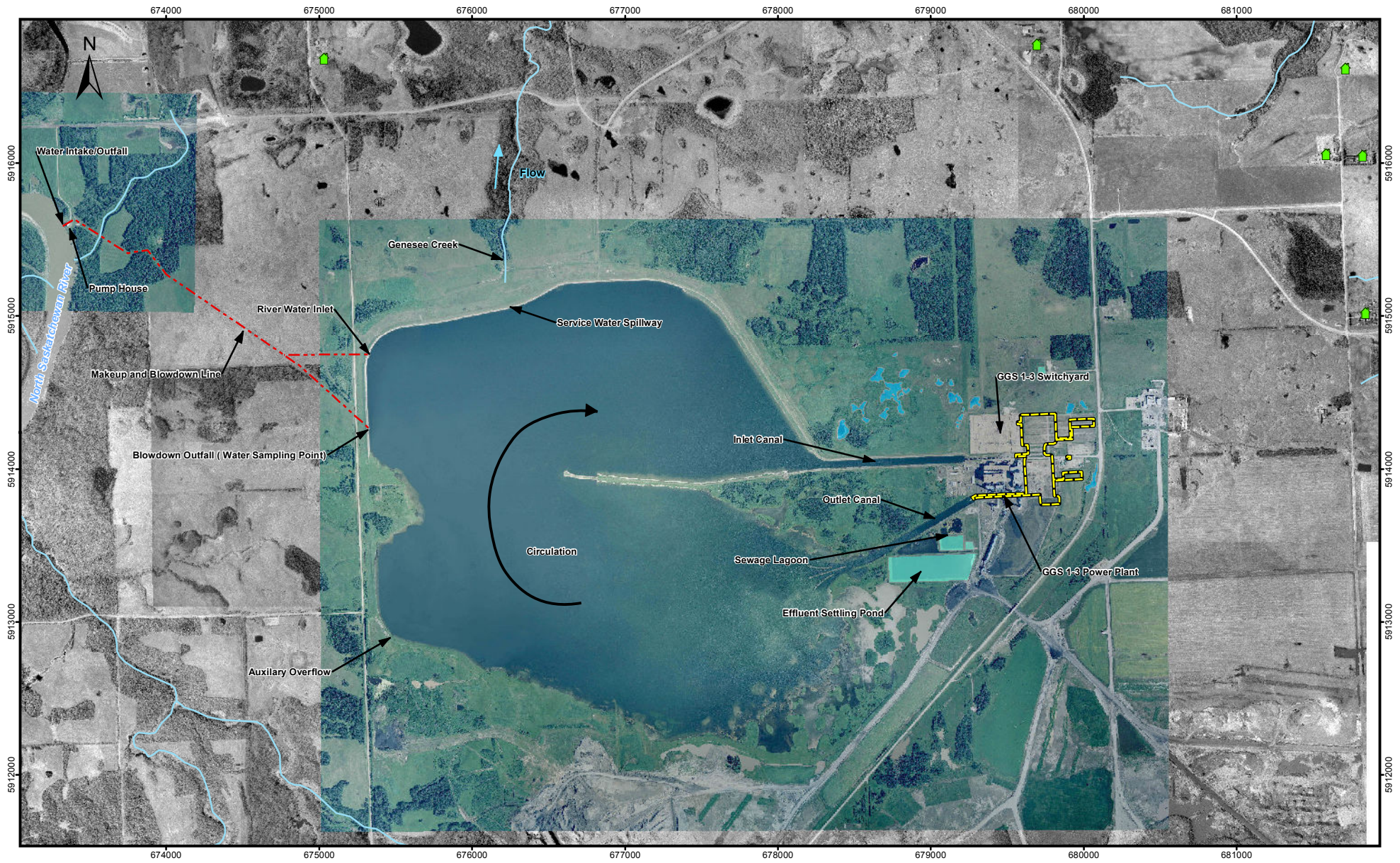
October 2013  
 1102-19025



Client/Project  
 CAPITAL POWER CORPORATION  
 GENESEE GENERATING  
 STATION EXPANSION

Figure No.  
 1

Title  
 REGIONAL SETTING OF THE PROJECT



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 11/15/2013 By: alundell

November 2013  
 1102-19025



Projection: UTM Zone 11 Datum: NAD 83  
 Imagery obtained from Alberta Sustainable Resource  
 Development, 2011 and CPC, 2011.

- Limit of Construction
- Makeup and Blowdown Line
- Residence
- Constructed Waterbody
- Wetland
- Watercourse

Client/Project  
 CAPITAL POWER CORPORATION  
 GENESSEE GENERATING  
 STATION EXPANSION

Figure No.  
 2

Title  
 SITE PLAN OF GENESSEE  
 GENERATING STATION UNIT 4 & 5



Environmental Impact Assessment Teams. These agencies have the authority to approve the construction and operation of the Project (AUC) and provide environmental terms and conditions for the Project (ESRD). Consultation with both agencies was undertaken to introduce the Project, discuss Capital Power's proposed regulatory approach and schedule, as well as confirm Capital Power's understanding of the regulatory approval processes and consultation requirements associated with the Project. Capital Power has worked successfully with these agencies on other Projects at Genesee and intends to build upon these past experiences.

Specifically, consultation activities will be undertaken in accordance with the requirements of the Participant Involvement Program Requirements (PIRP), established in AUC Rule 007: *Applications for Power Plants, Substations, Transmission Lines, and Industrial Systems Designations*, and other applicable requirements, as well as, *Alberta's First Nations Consultation Guidelines on Land Management and Resource Development – November 2007*. Capital Power will submit a First Nations Consultation Plan to ESRD for review and approval.

Engagement will also continue to take place via the Community Advisory Task Group, which was established in 2007 to provide the company with advice from community members on operations and community initiatives at GGS, communications protocols, and dialogue on environmental, health and safety topics. The CATG is comprised of members of the Genesee community and members of the Capital Power and Sherritt Genesee operations teams.

#### **4. Other relevant information, including**

##### **(a) the environmental assessment and regulatory requirements of other jurisdictions; and**

The Project will be subject to obtaining an approval to construct and operate under the *Alberta Hydro and Electric Energy Act (HEEA)*, as well as, an approval as an industrial facility, a power plant, under the *Alberta Environmental Protection and Enhancement Act (EPEA)*. Recently, Capital Power submitted a letter and Project Summary Table to ESRD seeking confirmation that an Environmental Impact Assessment (EIA) report is not required under *EPEA*. Based on the submission, ESRD determined that a screening report does not need to be prepared and an Environmental Impact Assessment (EIA) report is not required for the Project. Enclosed is a copy Capital Power's letter to ESRD and ESRD's response to Capital Power detailing its decision (Appendix C).

In its submission to ESRD, Capital Power respectfully asserted that there was no need for the Project to undergo the environmental assessment process under *EPEA*. The proposed facility will be located on an existing industrial site (i.e., previously disturbed) approved for power generation and fuelled by natural gas and will use the advanced gas and steam turbine technology available. The Project will be designed to meet the Clean Air Strategic Alliance's (CASA) standards and performance expectations for air emissions for the Alberta electricity sector, as well as, will be an advancement from the perspective of thermal efficiency and once-through cooling water demands.

Furthermore, the Project will also make effective use of the existing GGS infrastructure, thus reducing any potential environmental impacts due to the Project. Notwithstanding, Capital Power will be required to still provide detailed environmental information in support of its amendment Application and thus ensures that ESRD, as well as other regulatory agencies would have complete and sufficient information to review any potential environmental effects of the Project.

Capital Power plans to file an application to ESRD to amend its existing *Environmental Protection and Enhancement Act (EPEA)* approval (No. 773-02-00) for its existing GGS (Units 1-3), an expansion of an existing Industrial Facility. In addition, Capital Power plans to file a Rule 007 Application to the AUC to construct and operate the power plant. Capital Power will provide detailed environmental information in support of its amendment Application under *EPEA*. The information requirement set out in Section 3 of the *Approvals and Registrations Procedure Regulation* and Part 3 of the *Guide to Content for Industrial Approval Applications (August 2013)* will provide ESRD and other interested agencies with sufficient information to review the potential environmental effects of the Project and determine whether the Project should be approved.

Capital Power will also be subject to obtaining an approval to connect the power plant and associated transmission facilities to each other and to the Alberta Interconnected Electric System pursuant to the *HEEA*. A System Access Service Request was submitted to the Alberta Electrical System Operator (AESO) on April 30, 2013.

Capital Power will likely need to amend its current Alberta *Water Act* Approvals and Licence to Divert Water for the Project to reflect the integration of the Project with the existing GGS. The Project will make effective use of the existing GGS infrastructure, specifically, utilization of the existing river water intake, pumphouse, cooling pond, and point of discharge to the North Saskatchewan River (NSR) of the GGS. Utilizing the existing GGS infrastructure will help further reduce any potential environmental effects of the Project.

Capital Power will also need to obtain a Development Permit from the County of Leduc.

Since two new generator stacks will be installed (each approximately 80 m in height), aeronautical clearance from Transport Canada and land use clearance from NavCanada may be required. Given the close proximity to the existing generator stacks of the GGS, which are of much taller, the need for additional marking of the new stacks may not be required.

No other approvals (Federal or Provincial) are anticipated for the Project.

**(b) information concerning any environmental study that is being or has been conducted of the region where the project is to be carried out.**

No current or historic regional studies, within the context of *Canadian Environmental Assessment Act 2012* have been conducted in the region. However, Capital Power has historically undertaken many environmental studies in association with its existing GGS and associated Genesee Mine operating in the area. Recent and ongoing environmental studies include:

- Environmental assessments in 2001, 2005, 2011 in support of operating the existing GGS and Genesee Mine (i.e., approval to operate the Genesee 3 Project (2001), renewal to operate the existing GGS (2005), approval to extend the Genesee Mine (2011),
- Ongoing biomonitoring program that measures environmental effects of existing GGS (2004 to Present)
- Ongoing annual compliance reporting to ESRD and AUC (e.g., air, noise, surface and cooling pond water quality)

## **5. A description of the project's context and objectives.**

In December 2012, Capital Power announced the development of the Project (formerly the Capital Power Energy Centre). Capital Power, together with potential partner(s), plans to construct and operate the Project. The earliest in-service date is currently expected to be in 2017. The gross capacity of the Project will be approximately 1050 MW, and construction could be in two phases with each phase's capacity being approximately equal. The expected life for the facility is approximately 35 years.

The Project is being developed to meet expected increases in Alberta's power requirements, arising both from continued economic growth in the Province and from the expected retirements of existing coal generating units in the 2020 timeframe.

The Project will use natural gas combined-cycle (NGCC) technology. Specifically, the Project consists of two "1-on-1" units, each consisting of a single natural gas turbine paired with a heat recovery steam generator (HRSG), and a single steam turbine. The Plant will be located on a brownfield site adjacent to the existing GGS. The Project will make effective use of the existing GGS infrastructure, specifically, utilization of the existing river water intake, pumphouse, Genesee cooling pond, and point of discharge to the NSR.

Cooling water for the Project will continue to be obtained from the inlet channel of the Genesee cooling pond (the cooling pond), pass once through the steam turbines and then be released through the outlet channel back into the cooling pond.

Other minor on-site infrastructure that will be constructed includes:

- Minor additional roads;
- A natural gas pipeline tie-in to supply fuel for the gas turbines;
- Opened circulating / cooling and fire protection water pump house and associated pipelines;
- Ammonia tankage and storage for selective catalytic reduction (SCR) system; and
- Tankage and storage for process treated demineralized water.

Electricity generated by the Project will be transmitted to the Genesee substation owned by EPCOR via an approximately 200 m overhead 500 kV power line. The Project is anticipated to supply 1020 MW net of electricity to the Alberta power grid.

## **6. The provisions in the schedule to the Regulations Designating Physical Activities describing the project in whole or in part.**

Schedule 1, Section 3a

The Project is an expansion of a fossil fuel-fired electrical generating station that would result in an increase in production capacity of 50% or more and 200 MW or more.

**7. A description of the physical works that are related to the project including their purpose, size and capacity. [Physical works associated with the designated project (e.g., large buildings, other structures, such as bridges, culverts, dams, marine transport facilities, mines, pipelines, power plants, railways, roads, and transmission lines) including**

**their purpose, approximate dimensions, and capacity. Include existing structures or related activities that will form part of or are required to accommodate or support the designated project.]**

### Project Components

Phase I involves construction and operation of a combined cycle natural gas-fired power plant of approximately 525 MW gross capacity. Phase I will be located within a brownfield site (i.e., previously disturbed lands) adjacent to the existing GGS. The footprint of Phase I will be approximately 2.5 hectares (Figure 2). Phase II is identical to Phase I and also involves construction and operation of another modular combine cycle natural gas-fired power plant of 525 MW gross capacity. The Phase II footprint will also be located within a brownfield area adjacent to Phase 1 (Figure 2). The disturbance footprint of Phase II is also approximately 2.5 hectares.

Each power plant is comprised of three main components: a gas turbine generator, an HRSG, and a steam turbine generator in a “1-on-1” configuration.

Overall, the Project will encompass an area of approximately 200 m by 400 m, on land already prepared as part of construction of the Genesee Phase 3 Project (2001-2005). The turbines will be housed within two large buildings. The turbine building will be approximately 30 m high, and the two gas turbine generator stacks will each be approximately 80 m high.

### Associated Components

The Project will require electricity, natural gas, and a cooling water source. Electricity will be supplied by interconnecting with the existing Genesee substation located on-site. Additional electric equipment (e.g., transformers) will be installed at the substation and a short (200 m) aerial power line will provide connection.

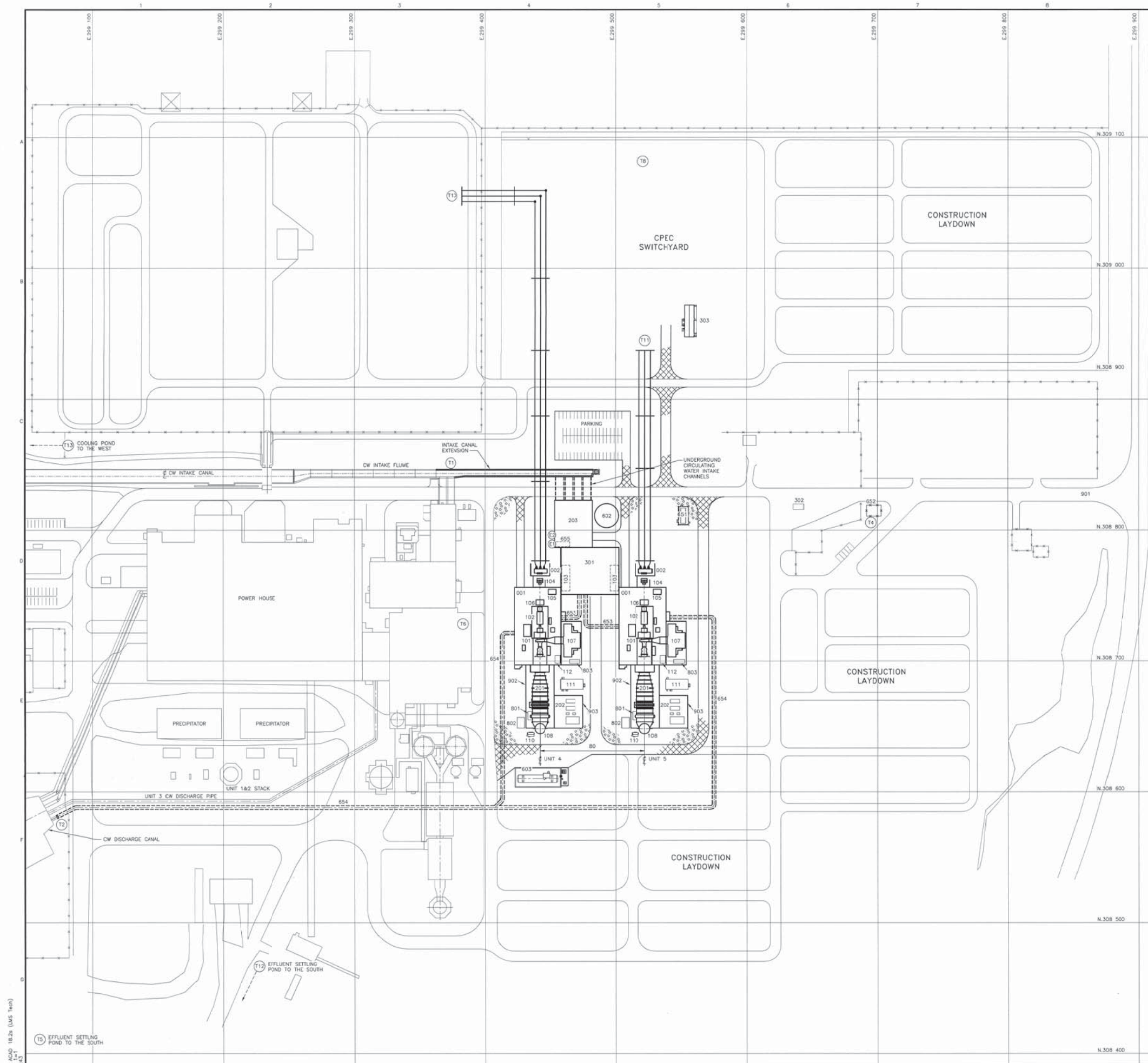
Gas will be supplied by a new supply line tied into the existing natural gas distribution network located in the vicinity of the Project.

Cooling water for the steam turbines will be sourced from the cooling pond’s existing inlet canal. All other water requirements for equipment cooling and cycle make-up will also be met from the cooling pond. Furthermore, all cooling water requirements for the Project will be met by making effective use of the existing GGS infrastructure, specifically, utilization of the existing river water intake, pumphouse, cooling pond, and point of discharge to the NSR. These synergies will reduce any potential environmental effects of the Project. Water held in the cooling pond is sourced from diverting water from the NSR.

The plot plan and the conceptual rendering present a visual presentation of physical works of the Project (Figure 3 and Figure 4, respectively).

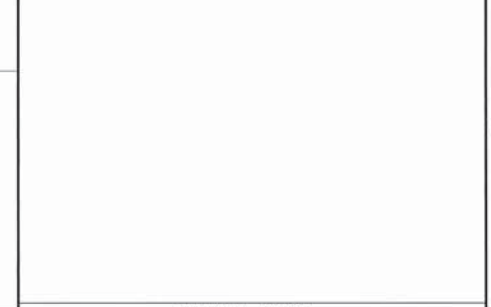
**8. The anticipated production capacity of the project and a description of the production processes to be used, the associated infrastructure and any permanent or temporary structures. [Anticipated size or production capacity of the designated project, with reference to thresholds set out in the Regulations Designating Physical Activities, including a description of the production processes to be used, the associated infrastructure, and any permanent or temporary structures.]**





FACILITIES LEGEND		
ID	FACILITY	HEIGHT ABOVE GRADE (METERS)
001	GENERATOR BUILDING	39.0
002	GENERATOR STEP-UP TRANSFORMER (DSU)	
101	GAS TURBINE / STEAM TURBINE	
102	GENERATOR	
103	MAIN SWITCHYARD ROOMS (LOWER LEVEL)	
104	UNIT AUXILIARY TRANSFORMER	
105	SFC TRANSFORMER	
106	GENERATOR CIRCUIT BREAKER (ON LOWER LEVEL)	
107	GAS TURBINE AIR INLET	
108	STACK	51.0
110	CONTINUOUS EMISSIONS MONITORING EQUIPMENT (CEMS)	4.0
111	SAMPLING BUILDING	4.0
112	COMPRESSOR WASH WATER DRAINS PIT	
201	HEAT RECOVERY STEAM GENERATOR (HRSG)	
202	BOILER FEED PUMPS	
203	PUMP HOUSE - CIRC WTR, COOLING WTR AND FIRE WTR	15.0
301	ADMIN/CONTROL (UPPER LEVEL) AND WATER TREATMENT (LOWER LEVEL)	15.0
302	GUARD HOUSE (EXISTING)	
303	SWITCHYARD CONTROL BUILDING	4.0
602	DEMINERALIZED WATER STORAGE TANK	11.0
603	AMMONIA UNLOADING/STORAGE TANK AND PUMPS	
651	FUEL GAS COMPRESSORS	4.0
652	FUEL GAS METERING STATION	
653	CIRCULATING WATER SUPPLY PIPE	
654	CIRCULATING WATER RETURN PIPE	
655	EMERGENCY DIESEL GENERATOR (INDOOR)	
801	AMMONIA VAPORIZER SKID	
802	NITROGEN STORAGE	
803	HYDROGEN/CO2 STORAGE	
901	MAIN ENTRANCE ROAD	
902	HRSG ENCLOSURE	44.0
903	BOILER FEED PUMP ENCLOSURE	6.0

EMISSION LOCATIONS				
ID	FACILITY	NORTHING	EASTING	ELEVATION
UNIT 4 STACK		308648.0	299442.0	783.3
UNIT 5 STACK		308648.0	299522.0	783.3
EMERGENCY DIESEL GENERATOR		308789.0	299452.0	736.3
DIESEL DRIVEN FIRE PUMP		308796.0	299452.0	736.3



TERMINAL POINTS			
T1	CIRCULATING WATER SUPPLY	T10	UNIT 4 500KV TO EXISTING SWITCHYARD
T2	CIRCULATING WATER RETURN	T11	UNIT 5 500KV TO NEW SWITCHYARD
T3	NOT USED	T12	POWER BLOCK STORM WATER DISCHARGE
T4	FUEL GAS	T13	SWITCHYARD STORM WATER DISCHARGE
T5	PROCESS WASTEWATER DISCHARGE		
T6	AUXILIARY STEAM SUPPLY		
T7	COMMUNICATION - PHONE & DATA (LATER)		
T8	ELECTRICAL TRANSMISSION 500KV		
T9	SANITARY WASTEWATER (LATER)		

GENERAL LEGEND			
●	NEW TRANSMISSION POLE (BY OTHERS)	○	EXISTING TRANSMISSION POLE
—	FENCE	⊙	INDICATES TERMINAL POINT
▨	NEW ASPHALT SURFACING	⊘	GRASS
▩	NEW AGGREGATE SURFACING	⊚	NEW HEAVY HAUL AGGREGATE SURFACING
■	CONCRETE		

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I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A QUALIFIED REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE PROVINCE OF ALBERTA.

SIGNED: STEPHEN L. HEYBORNE  
 DATE: 19/SEP/13 REG. NO. 56305

		<b>BLACK &amp; VEATCH CORPORATION</b>
<b>GENESSEE GENERATING STATION UNITS 4 AND 5</b> SITE ARRANGEMENT	PROJECT: 180144-CGAU-G1000 DRAWING NUMBER: 0	REV: 0

**Figure 3**

**Figure 4** Conceptual rendering of the Genesee Generating Station (GGS) Units 4 & 5 Project



## Production capacity

The Project consists of two phases with a combined generating capacity of up to 1050 MW gross output. The combined cycle configurations are based on a design, so that an initial phase of approximately 525 MW gross can be built, followed by integration of a second phase of approximately the same output at a later date. The earliest in-service date is currently expected to be in 2017.

## Process

Combustion of natural gas produces both mechanical and thermal energy. The mechanical energy is converted directly to electricity through the use of a generator, while the thermal energy is used to generate steam to produce mechanical energy to also create electricity.

Specifically, gas and air injected into the combustion chamber of the gas-fired turbine is combusted, in turn passing through the turbine blades, rotating the turbine shaft, and creating electricity. The exhaust heat is captured by the HRSG and transferred to water to create steam that is fed into the steam turbine to turn the generator and create electricity.

The combined cycle power plant configuration and processes are depicted in Figure 5.

### **9. A description of all activities to be performed in relation to the project.**

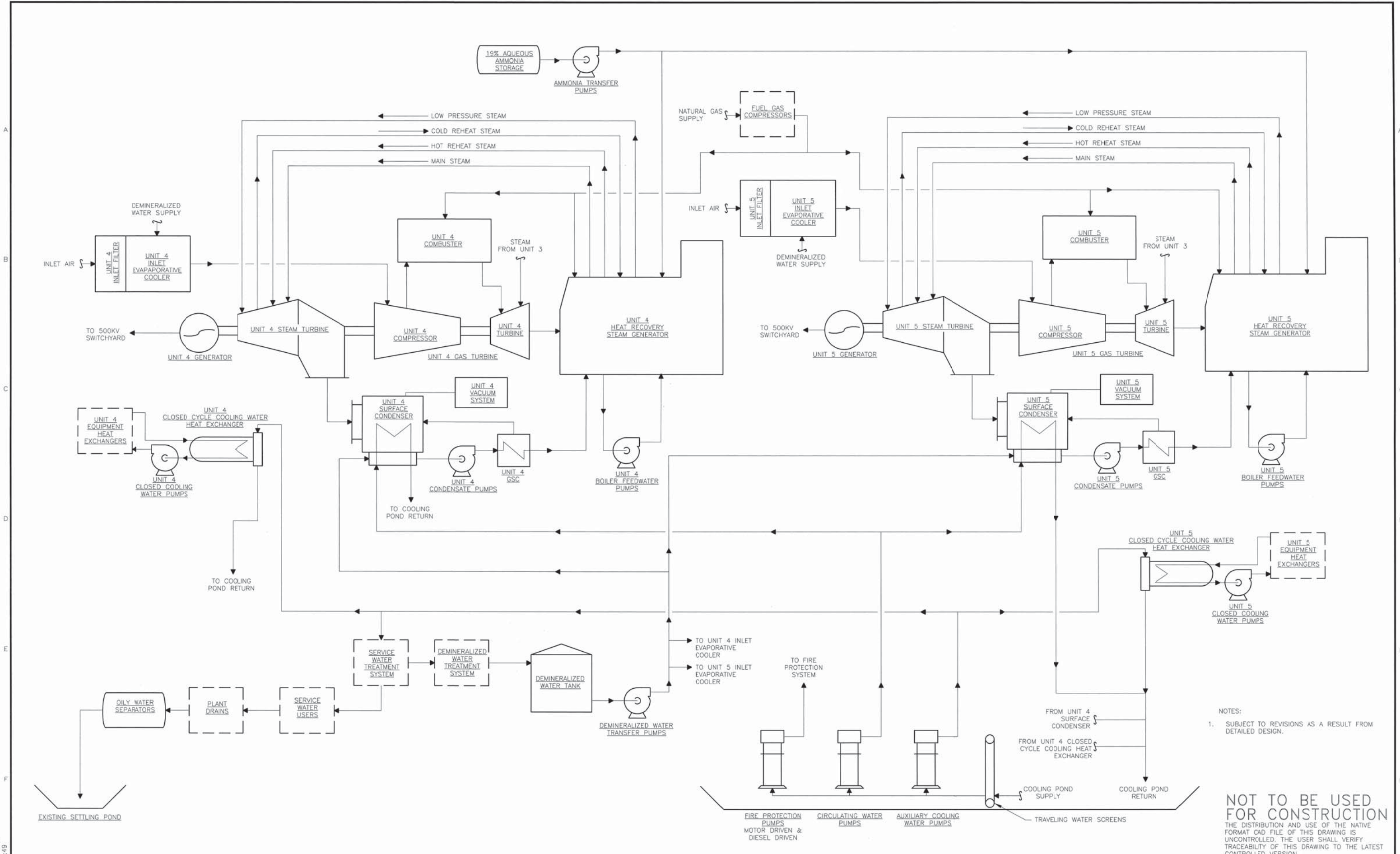
There are three main phases of the project: construction, operation, and decommissioning. Each phase has main activities associated with them, as described below.

Construction involves site preparation, civil works, installation of major equipment, connection of process and ancillary equipment, and finishing works. Since site grading has already occurred, there will be limited earth works. Commissioning of the power plant concludes construction and transition of it into the operational phase.

Initial activity involves marking out construction areas, followed by minor earth movement to meet design requirements. Installation of building and large equipment foundations, as well as steel structural components follows. Pouring the concrete flooring is next, followed by installation of equipment, building walls, roofing, windows, and doors. Following installation of the equipment, it will be connected by piping and cables for eventual operation. The HRSG will then be erected, as well as emission stacks associated with the other equipment.

The Project is expected to operate for 35 years. The power plant will periodically ramp up or down based on the electrical market requirements. During operations, the power plant will be shut down for scheduled maintenance activities.

Near the end of project life, decommissioning options will be assessed and will be dependent on future conditions of Alberta's electricity market.



NOTES:  
 1. SUBJECT TO REVISIONS AS A RESULT FROM DETAILED DESIGN.

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**BLACK & VEATCH CORPORATION**  
 DESIGNER: SAB DRAWN: SAB  
 CHECKED: DATE

**CAPITAL POWER**  
 GENESEE GENERATING STATION UNITS 4 AND 5  
 FLOW DIAGRAM POWER BLOCK

PROJECT: 180144-DM-0001  
 DRAWING NUMBER: 0  
**Figure 5**

**10. Provide a description of any solid, liquid, gaseous or hazardous wastes likely to be generated during any phase of the designated project and of plans to manage those wastes, including the following:**

**a. Sources of atmospheric contaminant emissions during the designated project phases (focusing on criteria air contaminants and greenhouse gases, or other non-criteria contaminants that are of potential concern) and location of emissions.**

Air

The Project will produce source and fugitive air emissions. Source air emissions will occur during operation of the Project and include nitrogen oxides, carbon dioxide, carbon monoxide, and minor amounts of volatile organic compounds and unburned hydrocarbons. Fugitive air emissions will occur during construction and operation from engines, buildings, and equipment exhausts and vents.

The Project will use advanced gas and steam turbine technology commercially available and be designed to meet the Clean Air Strategic Alliance's (CASA) standards and performance expectations for air emissions for the Alberta electricity sector.

For instance, dry low NO<sub>x</sub> burners on the gas turbines, effective emission control technology, adequate stack heights, and use of properly functioning equipment will be implemented to reduce air emissions.

Noise

The Project will produce machinery noise during construction and operation.

All noise emissions from the Project will comply with the AUC's *Rule 012 – Noise Control*. In addition, the Project will comply with any noise level restrictions required by the County of Leduc's noise bylaws or any potential conditions within the Development Permit issued by the County for the Project.

Acoustic treatment of the buildings and placement of silencers on the air intakes of the gas turbines are some of the options that may mitigate sound generation from the power plant.

**b. Sources and location of liquid discharges.**

The NSR will continue to be the source of all cooling water and make-up water for the Project. Cooling water will be obtained by diverting river water from the NSR via the existing pumphouse into the existing cooling pond. As previously described, the Project will utilize existing GGS infrastructure, specifically, the existing river water intake, pumphouse, cooling pond, and point of discharge to the NSR. These synergies will reduce any potential environmental effects due to the Project.

No additional diversion of water from the NSR is required for the Project beyond the volumes already permitted under the current Licences to Divert Water issued by ESRD for the existing GGS. Capital Power does anticipate the need to amend the current Licence to Divert Water to extend the expiration date and for some adjustments to operational blowdown conditions due to marginal changes in the cooling pond water temperature (slightly higher), which may result in a reduction of discharge back to the NSR due to increased evaporative losses from the cooling pond.

Liquid discharges of the Project include industrial process wastewater, stormwater, and domestic sewage.

Industrial process wastewater and stormwater from the power plant will be directed to the existing cooling pond (Figure 2). Process industrial wastewater blowdown from the HRSGs is also directed to the existing cooling pond. Blowdown from the cooling pond will be occasionally released into the NSR to meet operational water quality requirements of the GSS.

All cooling pond blowdown discharged back to the NSR will be undertaken in accordance with the conditions outlined in the current GGS *EPEA* Approval and/or meet any discharge criteria established by ESRD in its amended approval for the Project.

Domestic sewage (toilets, showers) from the facility will be connected to the on-site septic treatment system.

**c. Types of wastes and plans for their disposal (e.g., landfill, licensed waste management facility, marine waters, or tailings containment facility).**

Solid wastes will be generated during construction and incidentally through operation of the project (Table 1). All wastes will be disposed of according to the *Waste Control Regulation* and the requirements for each waste classification outlined in the *Alberta Waste Users Guide for Waste Managers*. Solid wastes will either be recycled or disposed of through licensed waste disposal companies at licensed facilities. Overall, waste management will be integrated into the existing waste management programs and procedures already developed for the existing GGS.

Table 1 Wastes and Waste Management Methods of the Project

Waste Stream	Management Method
Domestic and Shop Garbage	contracted waste disposal
Recyclables (wood, paper, metal)	contracted recycling
Hazardous Waste	approved disposal facility
Waste Oil	approved recycler

**11. A description of the anticipated phases of and the schedule for the project’s construction, operation, decommissioning and abandonment. Provide a description of the timeframe in which the development is to occur and the key project phases, including the following:**

**a. Anticipated scheduling, duration and staging of key project phases, including preparation of the site, construction, operation, and decommissioning and abandonment.**

The following presents the project schedule.

Applications and associated approvals	Q4 2013 – Q1 2015
Site Preparation	Q1 2015
<b>Phase 1</b>	
Construction	Q1 2015 – Q2 2017
COD	Q2 2017
Commercial operations	2017 – 2052
Decommissioning / Reclamation	2054 – 2058
<b>Phase 2</b>	
Construction	Q1 2016 – Q2 2018
COD	Q2 2018
Commercial operations	2018 – 2053
Decommissioning / Reclamation	2054 – 2058

**b. Main activities in each phase of the designated project that are expected to be required to carry out the proposed development (e.g., activities during site preparation or construction might include, but are not limited to, land clearing, excavating, grading, de-watering, directional drilling, dredging and disposal of dredged sediments, infilling, and installing structures).**

Since the Project will be located on a brownfield site, site preparation activities will be minimized. Specifically, no vegetation clearing of previously undisturbed areas including forests will be required, as well as minimal topsoil salvage, site grading, or site preparation activities will be necessary. The site is already prepared for the construction phase of the Project. Moreover, since the Project will be located on a brownfield location, potential environmental effects of the Project will be reduced. De-watering of the site is not required.

## PROJECT LOCATION INFORMATION

### 12. A description of the project's location, including

**a. its geographic coordinates; (i.e. longitude/latitude using international standard representation in degrees, minutes, seconds) for the centre of the facility or, for a linear project, provide the beginning and end points.**

The centre of the GGS 4 & 5 is located at the following geographic coordinates:

N	53°	20'	38.8356"	WGS 84
W	114°	17'	50.568"	

**b. Map(s) at an appropriate scale showing the location of the designated project components and activities relative to existing features, including but not limited to:**

**a. watercourses and waterbodies with names where they are known;**

**b. linear and other transportation components (e.g., airports, ports, railways, roads, electrical power transmission lines and pipelines);**

**c. other features of existing or past land use (e.g., archaeological sites, commercial development, houses, industrial facilities, residential areas and any waterborne structures);**

**d. location of Aboriginal groups, settlement land (under a land claim agreement) and, if available, traditional territory;**

**e. federal lands 3 including, but not limited to National parks, National historic sites, and reserve lands;**

**f. nearby communities;**

**g. permanent, seasonal or temporary residences;**

**h. fisheries and fishing areas (i.e., Aboriginal, commercial and recreational);**

**i. environmentally sensitive areas (e.g., wetlands, and protected areas, including migratory bird sanctuary reserves, marine protected areas, and National Wildlife areas); and**

**j. provincial and international boundaries.**

**Provide photographs of work locations to the extent possible.**

Figures 1 and 2 depict the Project in relation to existing features.

**c. the legal description of land to be used for the project, including the title, deed or document and any authorization relating to a water lot;**

The Project will encompass the SW and SE quarters of Section 25, Township 50, Range 3, W5M. The title is held by Capital Power GP Holdings Inc. (Appendix A).

**d. the project's proximity to any permanent, seasonal or temporary residences;**

The nearest residence is located in SW 32-50-2-W5M. It is 1.9 km from the Project. Residences in the vicinity of the project are indicated on Figure 2.

**e. the project's proximity to reserves, traditional territories as well as lands and resources currently used for traditional purposes by Aboriginal peoples; and**

The Project is located within the area covered by Treaty 6. The First Nations identified for consultation in the First Nations Consultation Plan submitted to ESRD are all Treaty 6 signatories. In addition, Capital Power will also engage the Métis Nation of Alberta, Region 4.

The Project is approximately 15 km south of Paul Nations Wabamun 133A and 133B Indian Reserve.

Capital Power, previously Edmonton Power and EPCOR, have occupied the site since the early 1980s. The lands proposed for the Project are not currently used for traditional purposes by Aboriginal peoples.

**f. the project's proximity to any federal lands.**

The Wabamun 133A and 133B Indian Reserves are within approximately 15 km of the Project.

**12.1 Land and Water Use To the extent that is known at this time, describe the ownership and zoning of land and water that may be affected by the project, including the following:**

**a. Zoning designations.**

The Project lies within the 'Genesee Power Project Overlay' of Leduc County's Land Use Bylaw (Bylaw 07-08) and south of the Genesee Area Structure Plan (Bylaw 18-13).

**b. Current land ownership, including sub-surface rights.**

Capital Power holds the surface and sub-surface rights to the lands to be occupied by the Project.

**c. Any applicable land use, water use (including ground water), resource management or conservation plans within and near the project site.**

Leduc County's Land Use Bylaw (Bylaw 07-08) provides planning guidance for industrial development at the project site. The power plant is located within the Genesee Power Project Overlay zone. Power plants are a permitted use within this zone, with road and property setbacks, landscape plan, as well as height restrictions in some portions of the zone, being the sole constraints to power plant development. General conditions related to such things as signage also apply.



The Genesee Area Structure Plan, applicable to lands north of the power plant, provides planning guidance to assist in accommodating rural and commercial/industrial development while maintaining the natural, agricultural, and small community features that characterise this area.

**d. For the proposed construction, operation, decommissioning and abandonment of a marine terminal, state whether or not the lands are routinely, and have been historically, used as a marine terminal, or are designated for such use in a land use plan that has been the subject of public consultation.**

This sub-section is not applicable.

**e. If the project is to take place within the waters or lands administered by a Canada Port Authority under the Canada Marine Act and its regulations, describe applicable land status and zoning under the Port Land Use Plan.**

This sub-section is not applicable.

**f. Describe whether the designated project is going to require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples.**

The lands proposed for the Project are not currently used for traditional purposes by Aboriginal peoples.

## FEDERAL INVOLVEMENT

**13. A description of any financial support that federal authorities are, or may be, providing to the project.**

No financial support is being provided for the Project.

**14. A description of any federal land that may be used for the purpose of carrying out the project.**

No federal lands are required for the Project.

**15. Any federal legislative or regulatory requirements that may be applicable including a list of permits, licences or other authorizations that may be required in order to carry out the project.**

No federal legislative or regulatory requirements are required for the Project.

## ENVIRONMENTAL EFFECTS

*The information to be provided in this section is meant to be a brief assessment of the environmental interactions of the project. A detailed examination of the potential environmental effects of the project does not need to be included in the project description.*





*Using existing knowledge and available information provide an overview of the following:*

**16. A description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the project (e.g., air, fish, terrain, vegetation, water, wildlife, including migratory birds, and known habitat use).**

The location for the Project is a brownfield site that was disturbed as part of construction (2001-2005) of the Genesee Phase 3 Project. The location is well within the existing plant fence line of the existing GGS. The site remains disturbed and is currently being used as a location for siting portable office trailers, as well as a laydown area for equipment as part of the ongoing operation of the existing GGS. The site is a level area built up with gravel fill. There is a limited amount of vegetated cover on the site (see Photos 1 to 4). Given the high level of existing disturbance in the Project area, the land in the immediate vicinity of the Project, an active industrial facility, is considered to have low habitat value for wildlife.

The cooling pond hosts waterfowl, fish species, and likely supports amphibians and aquatic mammals. The NSR, near the intake/outfall, hosts various fish species, wildlife, and amphibians. There are a number of wetlands to the north and south of the Project and white-tailed and mule deer concentration areas and movement corridors occur in the area of the Project.

An Environmental Overview Report has been prepared for this Project Description and is attached as Appendix B.

	
<p><b>Photo 1:</b> Looking southeast across the southwest portion of the power plant site</p>	<p><b>Photo 2:</b> Looking northwest across the northern portion of the power plant site</p>
	
<p><b>Photo 3:</b> Looking west across the centre of the power plant site</p>	<p><b>Photo 4:</b> Looking southeast across the southeastern portion of the power plant site</p>

**17. A description of any changes that may be caused, as a result of carrying out the project, to**

**(a) fish as defined in section 2 of the Fisheries Act and fish habitat as defined in subsection 34(1) of that Act;**

Marginal changes in the cooling pond water temperature (slightly higher) are anticipated, which will result in a reduction of discharge back to the NSR due to increased evaporative losses from the cooling pond. Given the comparatively small net reduction in volume of discharge anticipated to be released back to the NSR, changes to fish and fish habitat are not expected.

**(b) aquatic species, as defined in subsection 2(1) of the Species at Risk Act; and**

Construction and operation of the Project are not expected to lead to changes to aquatic species, including species at risk since no physical changes are expected to the existing intake/outfall at the NSR.

**(c) migratory birds, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994.**

Carrying out the Project is not expected to lead to changes to migratory birds since the Project is situated on an existing brownfield site and the existing cooling pond will remain unchanged.

**18. A description of any changes to the environment that may occur, as a result of carrying out the project, on federal lands, in a province other than the province in which the project is proposed to be carried out or outside of Canada.**

The Project is not being carried out on federal lands, in a province other than Alberta, or outside of Canada.

**19. Information on the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.**

The Project is located on disturbed land adjacent to the existing GGS. Carrying out the Project is not expected to change the environment such that it would affect Aboriginal peoples, including impacts to Treaty Rights, socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance.

**PROPONENT ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS**

Provide the following information to the extent that it is available or applicable:

**1. A list of Aboriginal groups that may be interested in, or potentially affected by, the designated project, including contact information (location, name, mailing address, email address, and fax and telephone numbers).**

Capital Power has had past dialogue and information exchanges with Aboriginal groups concerning Capital Power operations at the Genesee site, in addition to formal consultation programs in relation to projects that Capital Power has developed in the area. Based on this experience, Capital Power will seek to consult the communities listed in Table 2.

Table 2 Aboriginal groups with potential interest in the Project

Aboriginal Groups	Band Office
Paul First Nation	P.O. Box 89, Duffield, AB, T0E 0N0 Contact: Keith Rain Phone: 780-892-2691
Enoch Cree Nation	P.O. Box 29, Enoch, AB, T7X 3Y3 Contact: Cordell Makokis Phone: 780-470-4505
Alexis Nakota Sioux Nation	P.O. Box 7, Glenevis, AB, T0E 0X0 Contact: Orlando Alexis Phone: 780-967-2225
Alexander First Nation	P.O. Box 3840, Morinville, AB, T8R 1S3 Contact: Edwin Paul Phone: 780-939-5887
Métis Nation of Alberta, Region 4	11724 95 Street Edmonton, AB T5G 1L9 Contact: Métis Industry Relations Phone: 780-944-9288

Figure 1 indicates the location of First Nation communities in relation to the Project. There are no Métis communities in the regional area of the Project.

**2. A description of the engagement or consultation activities carried out to date with Aboriginal groups, including:**

- a. names of Aboriginal groups engaged or consulted to date with regard to the project;**
- b. date(s) each Aboriginal group was engaged or consulted; and**
- c. means of engagement or consultation (e.g., community meetings, mail or telephone).**

Specific consultation or engagement activities with Aboriginal groups regarding the Project will begin in Q4 2013. Reference to “Aboriginal groups” is inclusive of both First Nations and Métis groups.

Capital Power is engaging Aboriginal groups in accordance with ESRD’s consultation guidelines. Capital Power has developed a First Nations Consultation Plan (FNCP) to ensure meaningful engagement and consultation with First Nations with respect to the Project and its potential effects on treaty rights and Aboriginal interests. The FNCP was submitted to ESRD on October 7, 2013 to verify that it is consistent with the requirements of the Government of Alberta’s *First Nations Consultation Guidelines on Land Management and Resource Development* (the Consultation Guidelines).

Capital Power will also undertake engagement and appropriate consultation with a Métis organization to assess potential impacts to Aboriginal rights as they apply to Métis people.

The FNCP includes these components:

- Engagement and consultation activities will commence in Q4 2013.
- Capital Power will provide Project information, including a plain language document regarding the Project, early in the engagement process to allow enough time for Aboriginal groups to review and understand the information.
- Following the dissemination of Project information, Capital Power will follow-up with Aboriginal groups to discuss next steps each Aboriginal group would like to take regarding consultation.
- Capital Power will carefully document all contacts with Aboriginal groups, as well as the issues and concerns raised by them.
- Capital Power will prepare a final report outlining the efforts made to consult with Aboriginal groups.

**3. An overview of key comments and concerns expressed by Aboriginal groups identified or engaged to date, including any responses provided to these groups.**

As noted above, Capital Power has developed an FNCP, which was submitted for review by ESRD. Consultation activities will commence in Q4 2013.

**4. An overview of information on current use of lands and resources for traditional purposes by Aboriginal groups or peoples (e.g., information provided verbally or in writing, and past or present studies).**

The lands contemplated for the Project are not currently used for traditional purposes by Aboriginal peoples. The land for the Project is owned by Capital Power and has been previously disturbed as part of the construction of Genesee Phase 3 Project. No new land will be disturbed for the construction of the Project.

The site for the Project is being used for industrial purposes; industrial activity has occurred at the site since the mid-1980s. The lands proposed for the Project are not currently used for traditional purposes by Aboriginal peoples.

**5. A consultation and information-gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be collected (or, alternatively, an indication of why such engagement or consultation is not required).**

See response provided in Section 2c.

**CONSULTATION WITH THE PUBLIC AND OTHER PARTIES (OTHER THAN ABORIGINAL CONSULTATION INCLUDED ABOVE)**

Provide the following information to the extent that it is available or applicable:

**1. A list of stakeholders that may be interested and potentially affected by the carrying out of the designated project. In addition, please describe consultation activities carried out to date with stakeholders, including:**

- a. names of stakeholders previously consulted;
- b. date(s) each stakeholder was consulted; and
- c. means of consultation (e.g., community meetings, mail or telephone).

Capital Power has had past dialogue and information exchanges with various stakeholders concerning Capital Power operations at the Genesee site, in addition to formal consultation programs in relation to projects that Capital Power has developed in the area. Based on this experience, Capital Power will seek to engage the following stakeholders in its Consultation Program:

- General area residents with a focus on residents who live within 5 km of the Project site
- Local government (County of Leduc, Villages of Warburg and Thorsby)
- Community Groups (Genesee Agricultural Society, Genesee Synergy Group, Leduc-Nisku Economic Development Authority, and others)
- Environmental groups / associations
- Local and regional businesses
- Special interest/advocacy groups
- RCMP

Capital Power uses a number of ongoing consultation tools to communicate operations updates to the community. The following communication means are currently in use, and will be used to communicate ongoing updates for the duration of the Project:

- newsletters (4-6 annually);
- quarterly Community Advisory Task Group (CATG) meetings;
- bi-annual meetings with Leduc County Council;
- bi-annual meetings with Village of Warburg Council;

Newsletters are delivered via postal code drop, email and direct mail to residents within a 20 km radius of the Genesee Generating Station. The main objective of the newsletters is to provide area residents with current information about operations at the Genesee Station and the Genesee Mine. Newsletter distribution began when EPCOR (Capital Power) began Genesee operations in the early 1980s, and will continue throughout the life of the Project.

The CATG is a volunteer group of 7 local residents that meet three times annually to discuss topics relating to the GGS and Genesee Mine operations.

Capital Power also hosts special events at the Plant and Mine. This includes a field research tour, which has been held for the last four years. In 2012, this event attracted 230 individuals who received a tour of both the Genesee Generating Station and the Mine.

Informal breakfast meetings are conducted quarterly with the Leduc County Council and Village of Warburg to share updates regarding existing GGS and Genesee Mine operations, as well as, learn of upcoming projects in the County and Village. Synergies and partnerships are developed when possible and accommodations made where necessary to ensure operations do not interfere with local activities.

The following consultation events with regards to the proposed Project have taken place with parties identified in Table 3:

- An article on the Project appeared in the Genesee Community Newsletter in October 2013.
- Members of the CATG were briefed on the Project at the June 19, 2013 meeting and additional information was provided at a meeting on October 16, 2013.
- The Project was confirmed via email to the Councilor for Leduc County Division 7 on April 30, 2013.

- The Project was discussed at the bi-annual Good Neighbour Breakfasts on March 11 and September 12, 2013. Attendees at this breakfast were Leduc County Council members and Village of Warburg Council members.

In addition, the general public has been informed of the Project:

- On April 27, 2013, an article about the Capital Power Energy Centre appeared in the Edmonton Journal.
- Capital Power announced its intent to build the Project in a news release in December 2012.

## **2. An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.**

Key issues raised during the discussions noted above include:

- Questions about what form of regulatory approval would be required for the Project.
- The specific location and footprint size of the facility.
- The generation capacity of the Project.
- How gas would be transported to the Project site.
- The timing of project development activities.
- When more information would be available to area residents.

No issues have been raised by the general public.

Through the consistent connection to the Genesee community, Capital Power is aware of historical concerns that some area landowners have expressed. To date, concerns and comments expressed by stakeholders with the existing GGS operations and Genesee Mine include:

- the potential effects on the local environment specific to air and water,
- noise and dust from ongoing plant and mine operations, and
- loss of community and potential socio-economic effects due to additional land acquisition and road closures for the recent Genesee Mine Extension.

In 2010, Capital Power introduced a land purchase program as part of its Genesee Mine Extension proposal currently under review by the AER. Capital Power and numerous landowners have since negotiated land purchase agreements and as a result, the landowners previously in closest proximity to the newly proposed mine permit boundaries have relocated. The Genesee Mine is located adjacent to the GGS/Project site.

## **3. An overview of any ongoing or proposed stakeholder consultation activities.**

Consultation for the Project will occur in a manner that meets or exceeds the scope of the Participant Involvement Program described in AUC Rule 007, including notification and personal consultation activities.

Capital Power owns all of the land surrounding the Project area within at least 5 km, with exception of one section to the northeast which is within 3 km from the fence line. Capital Power has a long-standing relationship with this landowner and the company will undertake to conduct personal consultations with them regarding the Project.

Capital Power will also engage with residents who live in the broader Genesee area and engage those stakeholders having an interest in or concerns with the Project. Information will be made available to the general public through public notices of the Project in local newspapers, information provided in Capital Power's Genesee Newsletter, and on Capital Power's website. An open house in the local area is planned for late November 2013.

Consultation for the Project will focus on residents who live in the Genesee area and identify themselves as having an interest in or concerns with the Project. Identification of these residents will be achieved through public notice of the Project, information provided in Capital Power's Genesee Newsletter and on Capital Power's website, as well as planned public open houses.

Personal consultation with residents who have indicated an interest in the Project will consist of face to face meetings, mail, and telephone conversations as necessary.

#### **4. A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.**

Capital Power has consulted with the AUC and ESRD's Industrial Approvals and Environmental Impact Assessment Teams. These agencies have the authority to approve the construction and operation of the Project and provide environmental terms and conditions for the Project. Consultation with both agencies was undertaken to introduce the Project, discuss Capital Power's proposed regulatory approach and schedule, as well as confirm Capital Power's understanding of the regulatory approval processes and consultation requirements associated with the Project.

Capital Power submitted a letter and Project Summary Table to ESRD seeking confirmation that an Environmental Impact Assessment (EIA) report is not required under *EPEA*. Based on the submission, ESRD determined that a screening report does not need to be prepared and an EIA report is not required for the Project. A copy of ESRD's letter to Capital Power detailing its decision is attached as Appendix C.

Capital Power submitted a letter to the AUC seeking support for its intention to prepare and file a Facility Application under Rule 007 that allows flexibility to select the specific model for the gas turbines and other key project components of the Project in the future. Capital Power requested this flexibility since equipment vendors continue to make significant advancements in turbine operational and environmental performance. Capital Power's final determination of the specific equipment will be driven by the equipment characteristics, environmental performance attributes, cost, and operating parameters that would best suit the Alberta market. Capital Power also informed the AUC of intentions to prepare the accompanying emissions and environmental studies, on the basis of "generic" equipment with the commitment that any equipment ultimately selected would meet or exceed the environmental performance associated with the "generic" equipment detailed in the Facility Application, as well as, the *EPEA* amendment Application submitted to ESRD. Both the AUC and ESRD have indicated support for this regulatory approach.



## **Appendix A**

**Land Title Document for Sections 25, Township 50, Range 3,  
west of the 5<sup>th</sup> Meridian**



LAND TITLE CERTIFICATE

S  
LINC                      SHORT LEGAL                      TITLE NUMBER  
0034 074 641            0929973;2;1                      102 049 181 +153

LEGAL DESCRIPTION

DESCRIPTIVE PLAN 0929973  
BLOCK 2  
LOT 1  
EXCEPTING THEREOUT ALL MINES AND MINERALS  
AREA: 113.6 HECTARES (280.71 ACRES) MORE OR LESS

ATS REFERENCE: 5;3;50;25;S  
ESTATE: FEE SIMPLE

MUNICIPALITY: LEDUC COUNTY

REFERENCE NUMBER: 092 377 986

---

REGISTERED OWNER(S)					
REGISTRATION	DATE (DMY)	DOCUMENT	TYPE	VALUE	CONSIDERATION
102 049 181	11/02/2010	TRANSFER OF LAND			SEE INSTRUMENT

---

OWNERS

CAPITAL POWER GP HOLDINGS INC.  
OF 5TH FLOOR, 10088 - 102 AVENUE  
EDMONTON  
ATTN: SENIOR MANAGER, GENESEE GENERATING STATION  
ALBERTA T5J 2Z1  
(DATA UPDATED BY: CHANGE OF ADDRESS 102159689)

---

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION	NUMBER	DATE (D/M/Y)	PARTICULARS
842 213 468	27/09/1984	UTILITY RIGHT OF WAY GRANTEE - ATCO GAS AND PIPELINES LTD. 10035-105 ST EDMONTON ALBERTA T5J2V6 AS TO PORTION OR PLAN:8322222	

-----  
 ENCUMBRANCES, LIENS & INTERESTS

PAGE 2

# 102 049 181 +153

REGISTRATION

NUMBER      DATE (D/M/Y)      PARTICULARS

-----

(DATA UPDATED BY: TRANSFER OF UTILITY RIGHT  
 OF WAY 012021013)

842 238 850      02/11/1984      RESTRICTIVE COVENANT  
 "TO THE BENEFIT OF"  
 " AFFECTS PART OF THIS TITLE "

842 238 851      02/11/1984      RESTRICTIVE COVENANT  
 "TO THE BENEFIT OF"  
 " AFFECTS PART OF THIS TITLE "

842 238 852      02/11/1984      RESTRICTIVE COVENANT  
 "TO THE BENEFIT OF"  
 " AFFECTS PART OF THIS TITLE "

842 238 853      02/11/1984      RESTRICTIVE COVENANT  
 "TO THE BENEFIT OF"  
 " AFFECTS PART OF THIS TITLE "

842 240 008      05/11/1984      RESTRICTIVE COVENANT  
 "TO THE BENEFIT OF"  
 " AFFECTS PART OF THIS TITLE "

852 146 859      16/07/1985      RESTRICTIVE COVENANT  
 " AFFECTS PART OF THIS TITLE "

852 146 860      16/07/1985      RESTRICTIVE COVENANT  
 " AFFECTS PART OF THIS TITLE "

032 024 936      17/01/2003      CAVEAT  
 RE : LEASE , ETC.  
 CAVEATOR - EPCOR POWER MANAGEMENT INC.  
 5TH FLR, 10088 - 102 AVENUE  
 EDMONTON  
 ALBERTA T5J2Z1  
 CAVEATOR - TRANSALTA ENERGY CORPORATION.  
 BOX 1900, STATION M  
 110 12 AVE SW  
 CALGARY  
 ALBERTA T2P2M1  
 " AFFECTS PART OF THIS TITLE "

(DATA UPDATED BY: TRANSFER OF CAVEAT  
 092239924)

042 330 591      09/08/2004      CAVEAT  
 RE : SURFACE LEASE UNDER 20 ACRES  
 CAVEATOR - ATCO GAS AND PIPELINES LTD.  
 10035-105 ST  
 EDMONTON

( CONTINUED )

REGISTRATION

NUMBER      DATE (D/M/Y)      PARTICULARS

-----

ALBERTA T5J2V6  
 " AFFECTS PART OF THIS TITLE "

042 545 093      14/12/2004 EASEMENT  
 SEE EASEMENT FOR SERVIENT AND DOMINANT TENEMENT  
 " AFFECTS PART OF THIS TITLE "

072 529 297      01/09/2007 UTILITY RIGHT OF WAY  
 GRANTEE - ALTALINK MANAGEMENT LTD.  
 2611 - 3 AVE SE  
 CALGARY  
 ALBERTA T2A7W7  
 " AFFECTS PART OF THIS TITLE "

(DATA UPDATED BY: CHANGE OF ADDRESS 092059248)

122 228 325      18/07/2012 RESTRICTIVE COVENANT

122 241 702      26/07/2012 CAVEAT  
 RE : RESTRICTIVE COVENANT , ETC.

122 411 875      13/12/2012 RESTRICTIVE COVENANT

TOTAL INSTRUMENTS: 015

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN  
 ACCURATE REPRODUCTION OF THE CERTIFICATE OF  
 TITLE REPRESENTED HEREIN THIS 9 DAY OF  
 OCTOBER, 2013 AT 11:50 A.M.

ORDER NUMBER: 24556622

CUSTOMER FILE NUMBER:



\*END OF CERTIFICATE\*

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED  
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 OR TECHNICAL EXPERTISE FOR THE BENEFIT OF CLIENT(S).

**Appendix B**  
**Environmental Overview Report**

**Genesee Generating Station:  
Units 4 and 5 Environmental  
Overview Report**

An Environmental Overview  
Report prepared for Capital  
Power Corporation in relation to  
their proposed expansion of the  
Genesee Generating Station



Prepared for:  
Capital Power Corporation

Prepared by:  
Stantec Consulting Ltd.

October 2013  
110219025

# Sign-off Sheet

This document entitled Genesee Generating Station: Units 4 and 5 Environmental Overview Report was prepared by Stantec Consulting Ltd. for the account of Capital Power Corporation. The material in it reflects Stantec's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Prepared by <Original signed by>  
(signature)

Jason Day, MNRS  
Project Manager, Environmental Planner

Prepared by: <Original signed by>  
(signature)

David Hammer, M.Sc.  
Project Manager, Environmental Planner

Reviewed by <Original signed by>  
(signature)

James D. Howell, M.Sc., P.Geol.  
Senior Principal



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# GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

October 2013

## 1.0 Introduction

Capital Power has retained Stantec Consulting Ltd. (Stantec), to complete an Environmental Overview Report for the proposed Genesee Generation Station Units 4 and 5 Project (the Project). The Project is to be located on a brownfield site along Highway 770, within the SE¼ of Section 25, Township 50, Range 3, West of the 5<sup>th</sup> Meridian (see Figure 1).

This report provides a description of the current state of the environment in the project area. The report is based upon review of desktop sources relevant to the Project, including past assessments of land use and natural resource use, terrain and soils, hydrology, vegetation, wildlife, and fish and fish habitat. A site visit was conducted September 11, 2013, to supplement and verify the information collected for the Project.

### 1.1 REGULATORY FRAMEWORK

Various acts, regulations, guidelines and permits may apply to the Project. A summary of these environmental regulatory requirements is provided in Table 1. This list is not designed to be an exhaustive list of all regulatory requirements, but rather a guide to those most common and applicable to the Project.

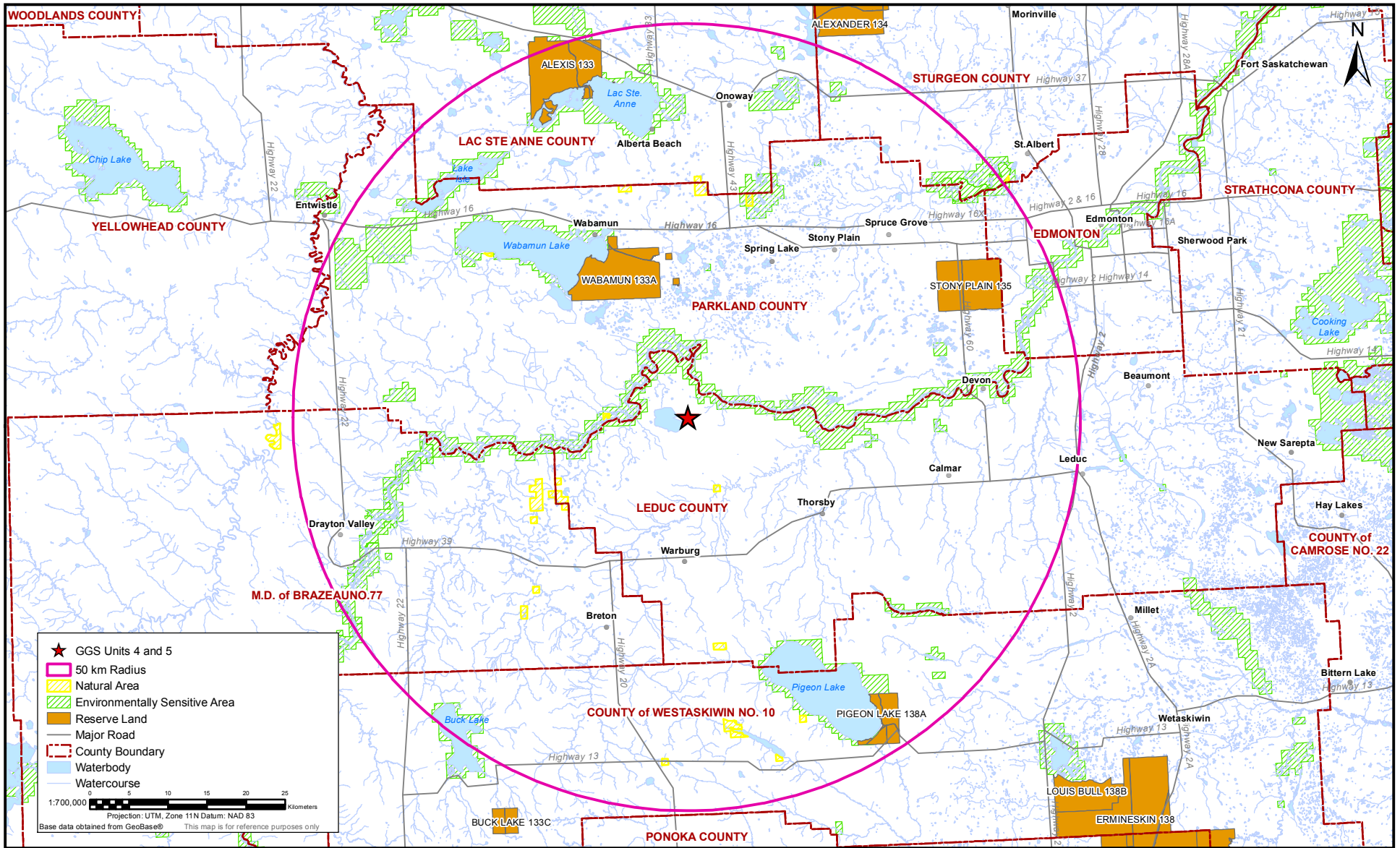
**Table 1 Acts and Regulations that Apply to the Project**

Legislation/Regulation	Overseeing Agency	Comments
<b>Municipal Authority</b>		
Land Use Bylaw (Bylaw No. 07-08)	Leduc County	This Bylaw is intended to regulate and control the use of lands and buildings in order to achieve orderly and economic development in the County, consistent with the provisions of the Municipal Development Plan and other statutory plans.
<b>Provincial Authority</b>		
<i>Environmental Protection and Enhancement Act (EPEA)</i>	Alberta Environment and Sustainable Resource Development (ESRD)	EPEA governs all issues related to the environment and is designed to support and promote the protection, enhancement and wise use of the environment. Numerous regulations, Codes of Practice and standards and guidelines are associated with the Act.

# GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Introduction  
October 2013

Legislation/Regulation	Overseeing Agency	Comments
<b>Provincial Authority (con't)</b>		
<i>Hydro and Electric Energy Act (HEE Act)</i>	Alberta Utilities Commission (AUC)	Rule 007 governs the construction or alteration and operation of power plants, substations, transmission lines, and industrial system designations, pursuant to the <i>HEE Act</i> , and for approvals of a Needs Identification Document (NID) in accordance to the <i>Electric Utilities Act (EU Act)</i> and Transmission Regulation. It is designed to protect social, economic and environmental interests of Alberta where competitive market forces do not.
<b>Federal Authorities</b>		
<i>Migratory Birds Convention Act (MBCA)</i>	Environment Canada	The <i>MBCA</i> applies to all lands in Canada and prohibits disturbance to migratory birds, their nests or eggs
<i>Species at Risk Act (SARA)</i>	Environment Canada	The <i>SARA</i> contains prohibitions that make it an offence to kill, harm, harass, capture or take an individual of a species listed in Schedule 1 of <i>SARA</i> as Endangered, Threatened or Extirpated. On private land, these prohibitions apply only to aquatic species listed in Schedule 1 and migratory birds listed in the <i>Migratory Birds Convention Act</i> and listed in Schedule 1.
<i>Fisheries Act</i>	Fisheries and Oceans Canada	The <i>Fisheries Act</i> was established to manage and protect Canada's fisheries resources. The <i>Fisheries Act</i> governs all fishing zones, territorial seas and inland waters of Canada and is binding to federal, provincial and territorial governments.
<i>Canadian Environmental Assessment Act (CEA Act)</i>	Canadian Environmental Assessment Agency (CEA Agency)	The <i>CEA Act</i> governs issues related to projects with potential adverse environmental effects that are within federal jurisdiction including; fish and fish habitat and other aquatic species; migratory birds; federal lands; effects that cross provincial or international boundaries; effects that impact on Aboriginal peoples; changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.



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Client/Project  
 CAPITAL POWER CORPORATION  
 GENESEE GENERATING  
 STATION EXPANSION

Figure No.  
 1

Title  
 REGIONAL SETTING OF THE PROJECT

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## 2.0 Environmental Overview Methods

A desktop review and site visit of the project area was conducted to identify potential environmental considerations relevant to the Project. Readily available reports, maps, and databases were reviewed for relevant information and for inclusion in the environmental overview. Potential adverse environmental effects of the Project were identified through consideration of the interactions between the Project and the environment.. Mitigation strategies that could be implemented were then identified to limit these effects.

### 2.1 DESKTOP REVIEW

The desktop review involved review or queries of:

- Previous environmental assessments (e.g., the Genessee Mine Extension Project);
- Results of the 2012 Christmas bird count;
- Published literature and maps;
- Species At Risk Public Registry;
- Alberta Conservation Information Management System (ACIMS) (Appendix A); and
- Fish and Wildlife Management Information System (FWMIS) (Appendix B).

### 2.2 ACIMS AND FWMIS DATABASE SEARCH

A search for known occurrences of listed plants, plant communities, and invertebrates in the project area was conducted through ACIMS (Alberta Tourism, Parks and Recreation, 2012). Known occurrences of wildlife and fisheries species of management concern, and wildlife management areas, within 5 km of the project area were retrieved through the FWMIS Internet Mapping Tool (Alberta Environment and Sustainable Resource Development, 2012).

All species of conservation concern identified via the ACIMS database inquiry were summarized using desktop literature sources; Subnational Status Rank (S\_Rank) definitions were provided by the ACIMS. Wildlife species of management concern identified via the FWMIS database were described using desktop literature sources. Provincial ranking classes are: Sensitive, May be at Risk and At Risk (Alberta Environment and Sustainable Resource Development, 2012). The SARA was also reviewed to assess the status/ranking of the potential species that could be present within the project area. Table 2 provides a complete list of the conservation status definitions of listed species residing within Alberta.

# GENESEEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Environmental Overview Methods  
October 2013

**Table 2** Definitions of Alberta's General Status Categories<sup>1</sup>

Status Rank		Definition
S1	At Risk	Any species known to be at risk after formal detailed status assessment and legal designation as <i>Endangered</i> or <i>Threatened</i> in Alberta.
S2	May Be At Risk	Any species that may be at risk of extinction or extirpation, and is therefore a candidate for detailed risk assessment.
S3	Sensitive	Any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.
S4	Apparently Secure	Potentially some cause for long term concern due to declines or other factors. Taxon is uncommon but not rare.
S5	Secure	Taxon is common, widespread, and abundant.
SU	Undetermined	Any species for which insufficient information, knowledge or data is available to reliably evaluate its general status.
SRN	Not Assessed	Any species that has not been examined during this exercise.
SNA	Exotic/Alien	Any species that has been introduced as a result of human activities.
SX	Extirpated/Extinct	Any species no longer thought to be present in Alberta ( <i>Extirpated</i> ) or no longer believed to be present anywhere in the world ( <i>Extinct</i> ).

<sup>1</sup> (Alberta Sustainable Resource Development, 2011)

## 2.3 SITE VISIT

A site visit was conducted on September 11, 2013. Capital Power and Stantec personnel visually inspected the project site, Genesee Cooling Pond (the cooling pond), and intake/outfall on the North Saskatchewan River (NSR). The objective of the site visit was to observe groundcover, including signs of weed presence, potential contamination, and presence of wildlife habitat. General notes on vegetation species, site drainage, and water features were taken, and photographs collected. During the course of the site visit, incidental wildlife observations and wildlife habitat features were also recorded.

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## 3.0 Current State of the Environment

The project area is located within the Dry Mixed Woods Subregion of the Boreal Forest Region of Alberta (Natural Regions Committee, 2006). This Subregion is characterized by aspen forests and cultivated lands, with fens commonly found in low lying areas. Porcupine grass (*Stipa spartea* var. *curtiseta*), June grass (*Koeleria macrantha*), sedges and pasture sagewort (*Artemisia frigida*) are commonly found on steep slopes, while in areas where moisture is more abundant slender wheat grass (*Agropyron trachycaulum*) is more abundant. Saskatoon-buckbrush (*Amelanchier alnifolia*) communities are found in ravines, gullies or other lower slope positions. Dry areas of the subregion are primarily dominated by jack pine (*Pinus banksiana*) stands with lichen understories, while somewhat wetter areas can experience mixed or pure stands of jack pine (*Pinus banksiana*), aspen (*Populus tremuloides*), and white spruce (*Picea glauca*), with understories including bearberry (*Arctostaphylos uva-ursi*), common blueberry (*Vaccinium myrtilloides*), green alder (*Alnus crispa*), prickly rose (*Rosa acicularis*), wild lily-of-the-valley (*Maianthemum canadense*) and hairy wild rye (*Elymus villosus*). On rich sites with more moisture, balsam poplar (*Populus balsamifera*), aspen (*Populus tremuloides*), and white spruce (*Picea glauca*) occur in mixed stands. Understories in these areas include red-osier dogwood (*Cornus stolonifera*), prickly rose (*Rosa acicularis*) and herbaceous species found in deciduous or mixed-wood stands and feather mosses and horsetails (*Equisetum arvense*), in coniferous stands.

Given the high level of existing disturbance in the project area and agronomic species cover, the land in the immediate vicinity of the Project is considered to have low habitat value for wildlife, and limited potential to host rare plant species. Furthermore, the Project location is a brownfield site that was previously disturbed as part of construction of the Genesee Phase 3 Project (2001-2005). The Project, itself, is located within the fence line of the existing Genesee Generation Station (GGS) and thus also has a very low habitat value for wildlife, and limited potential to host rare plant species.

### 3.1 TERRAIN AND SOILS

The topography in the general area varies from flat to gently rolling and slopes in a north-easterly or in a north-westerly direction (EPCOR Utilities Inc., 2001). Slopes in the region typically range from 0 to 30%. Elevation drops from 825 m ASL in the southwest of the general Genesee area, to 660 m ASL on the floodplain of the NSR (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). The project site sits at approximately 735 m ASL and is flat.

The project area and surrounding region is underlain by Paleocene shale, sandstone, and siltstone formations with coal beds of late Cretaceous and early Tertiary age (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Local surficial geology is described as undulating to hummocky with fine-textured soils (clays and silts) on local till, flat to undulating till with minor amounts of water-sorted materials, ridged or irregular hills/depressions on till or water-sorted materials, and eroded streams and slopewash comprised of exposed till, bedrock, or colluvium.

# GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Current State of the Environment  
October 2013

The project area is located in a transitional region between Black Chernozems and Gray Luvisols (EPCOR Utilities Inc., 2001). The dominant native soils at the project site are Dark Gray Luvisols, Humic Gleysols, and Mesisols (EPCOR Utilities Inc., 2001). However, the project site is currently underlain by fill and replaced topsoil, since native soils had been salvaged when the site was prepared during construction (2001-2005) of the Genesee Phase 3 Project (Unit 3).

## 3.2 HYDROLOGY

The proposed expansion lies in the basin of Genesee Creek (EPCOR Utilities Inc., 2001). The only watercourses or waterbodies in the immediate vicinity of the Project are the cooling pond, sewage lagoon, and effluent settling pond associated with the existing GGS, as well as some open water wetlands to the north and south of the Project (Figure 2).

Surface runoff from the immediate area collects in small depressions and wetlands to the north and south of the Project, evaporates, or feeds into the cooling pond. All surface runoff from the current generation station and Project site is contained and enters the effluent settling pond prior to flowing into the cooling pond.

The Genesee Cooling Pond, built in 1980s, has a 2.6 km diameter, a surface area of 735 ha, a 3.5 m average depth, and holds 34 Mm<sup>3</sup> (Golder Associates, 2010). The cooling pond draws water from the NSR. Capital Power currently can divert up to 34.1 Mm<sup>3</sup> for the operation of the GGS. To maintain proper operation of the cooling pond, water is released directly to the NSR through a 900 mm pipeline. Returning water to the river is commonly referred to as "blowdown water". The pipeline connecting the cooling pond to the outfall on the NSR is on the west side of the pond and operates under gravity flow only (Figure 3-1). The temperature of the cooling water released to the river is warmer than the river water. The river is 120 m wide at the pump house.

No additional diversion of water from the NSR is required for the Project beyond the volumes already permitted under the current Licences to Divert Water issued by ESRD for the existing GGS. The current approved annual withdrawal volume of 34.1 Mm<sup>3</sup> represents 0.5% of the NSR mean annual flow (Golder Associates, 2010). The annual volume of water to be released back into the river is expected to be reduced from current conditions once the Project starts operating due to additional evaporative losses. Since the expected net loss of water being released back into the NSR is anticipated to be small in comparison to mean annual flow, measurable changes in flow volume in the NSR is not expected.

## 3.3 VEGETATION

The majority of the lands around the project area and existing GGS have been cleared for agriculture (mostly cultivation with some pasturelands) with the remaining native vegetation comprised of aspen-dominated woodlots, scattered in isolated pockets throughout the project area. Bare groundcover dominates the project site with some agronomic species cover found on the eastern half of the site (Photos 1 to 4). A number of wetlands occur to the north, south, and east of the project site (Figure 2). The pond to the north of the north laydown area (60 m away) is a Class 4 wetland (dugout) and is covered by open water with cattails and bulrushes at

# GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Current State of the Environment  
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the margins. The wetlands between Highway 773 and the Project (40 m away) are Class 4 wetlands covered by open water, sedges, and cattails. The wetlands were created to provide stormwater control for the immediate area. The Class 4 wetlands complex to the south of the Project, similar to the north wetland, is covered by open water, cattails and bulrushes. Since surface runoff from the GGS is contained and directed to the stormwater pond, there is no hydrological connection between the project site and the nearby wetlands. No weed populations were observed during the site visit.

	
<b>Photo 1:</b> Looking southeast across the southwest portion of the power plant site	<b>Photo 2:</b> Looking northwest across the northern portion of the power plant site
	
<b>Photo 3:</b> Looking west across the center of the power plant site	<b>Photo 4:</b> Looking southeast across the southeastern portion of the power plant site

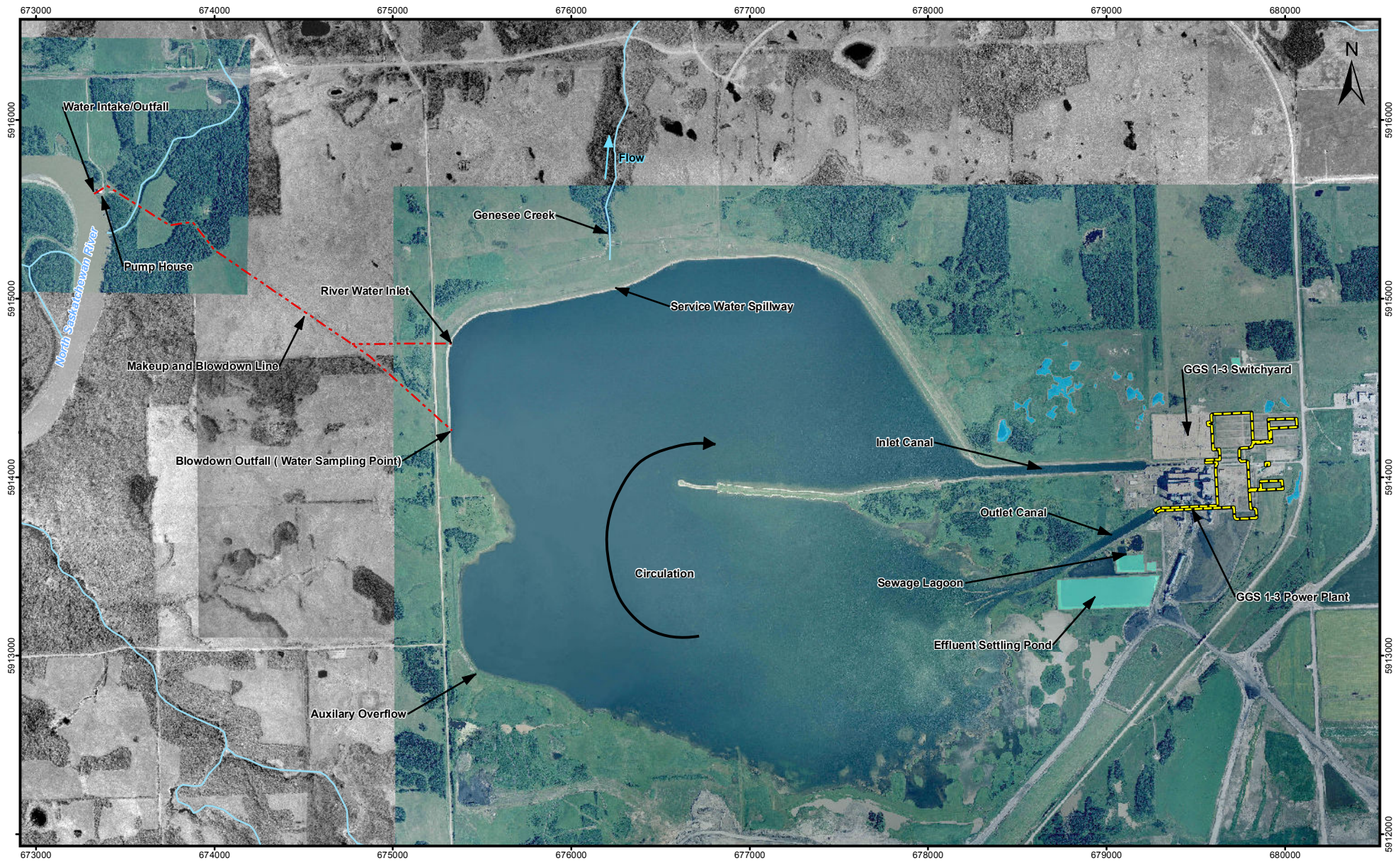
No federally listed plant species and no plants listed under the *Wildlife Act* for endangered species were found for the project area during the ACIMS search (Alberta Tourism, Parks and Recreation, 2012). This can be attributed to the amount of past disturbance to the site, which has reduced the potential for sensitive plant species to occur. However, there are plant species listed by the ACIMS, including golden saxifrage (*Chrysosplenium tetrandrum*) found in the Mine



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Extension Area, and some nonvascular species including *Plagiomnium ciliare* and *Leptodictyum humile* found to the southwest of the project area (Alberta Environment and Sustainable Resource Development, 2012). The results of the ACIMS search found in Appendix A shows the location of these plant communities.



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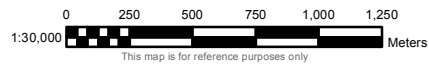
Projection: UTM Zone 11 Datum: NAD 83  
 Imagery obtained from Alberta Sustainable Resource  
 Development, 2011 and CPC, 2011.

- Limit of Construction
- Makeup and Blowdown Line
- Constructed Waterbody
- Wetland
- Watercourse

Client/Project  
 CAPITAL POWER CORPORATION  
 GENESSEE GENERATING  
 STATION EXPANSION

Figure No.  
 2

Title  
 WETLANDS IN THE VICINITY OF  
 THE PROJECT



# GENESEEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

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## 3.4 WILDLIFE

Although the project area has limited habitat value, native vegetation communities associated with the NSR valley system reside to the north of the project area and existing GGS. The NSR valley system is considered an important piece of high value habitat within the province and is a critical corridor for biodiversity preservation and wildlife movement (EPCOR Utilities Inc., 2001).

The NSR valley is a regionally unique ecotone providing a diversity of habitat supporting a wide range of resident and migratory species. The river valley forest community is structurally complex with coniferous species dominating the drier south-facing slopes and aspen-dominated deciduous communities occupying the wetter north-facing slopes. Differing age-classes of these mixed-wood stands creates various degrees of understory development and canopy closure providing ideal foraging and cover resources for both avian and terrestrial species. An intricate network of tributaries form the NSR watershed and further increase wildlife mobility and habitat availability in the area. The NSR is vital to biological conservation and ecological integrity.

In addition to wildlife studies conducted to support regulatory applications in 1989, 2001, and 2011, ongoing wildlife monitoring has occurred in Genesee area since 2005. This monitoring primarily focuses on overwintering waterbird activities associated with cooling ponds of the Genesee power facility, but also include peregrine falcon nesting, ungulate, small mammal, and amphibian monitoring. A list of wildlife species potentially occurring within the general area is provided Appendix C. This list also indicates the species observed during field surveys conducted to support Capital Power's previous development applications and monitoring requirements.

### 3.4.1 Amphibians

Amphibian surveys occur in the Genesee plant and mine area every five years, starting in 2005 as part of the biomonitoring program requirements stipulated in the current EPEA approval for the GGS (TransAlta Generation Partnership, 2011; TransAlta Utilities Corporation and EPCOR Utilities Inc., 2006). Capital Power observed boreal chorus frog (*Pseudacris maculate*), wood frog (*Lithobates sylvaticus*), and Western toad (*Anaxyrus boreas*) in 2005 and 2010. Boreal chorus frogs and wood frogs are considered widespread due to the high number of observations and relative high amount of available habitat. Habitat for the Western toad (e.g., black spruce woodland, bogs, and fens) is limited within the general area, so this species is considered to have low abundance in the area.

### 3.4.2 Birds

Bird surveys have been conducted in the Genesee plant and mine area in support of previous regulatory applications and under the biomonitoring program as part of the current EPEA approval for the GGS. Species associated with dry mixedwood boreal and deciduous forest occur in the general area (EPCOR Utilities Inc., 2001). However, the project site is located south of this habitat on a heavily disturbed site that does not provide habitat for most species of birds (EPCOR Utilities Inc., 2001). Appendix C presents a summary of the FWMIS review and desktop analysis, and lists potential species occurring in the area.



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## 3.4.2.1 Migratory Birds

The project area has relatively low capability for waterfowl production, based on the limited availability of waterbodies and wetlands suitable for breeding and brood rearing. Drought conditions in recent years, combined with intensive agricultural land uses, have greatly reduced the availability of habitat for waterfowl and other water birds (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Capital Power monitored migratory waterbird use of the cooling pond in 2001 and has continued to monitor bird presence on the cooling pond and areas in the vicinity of the GGS since 2005. To date, 24 species of waterfowl have been observed utilizing the cooling pond between October and March. Common goldeneye (*Bucephala clangula*), lesser scaup (*Aythya affinis*), common merganser (*Mergus merganser*), and redhead (*Aythya Americana*) are observed as the most common species overwintering on the cooling pond (Capital Power Corporation, 2013). Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*), and American wigeon (*Anas americana*) are the most dominant species during spring and fall. Neotropical migratory birds do not appear to overwinter at the pond.

## 3.4.3 Mammals

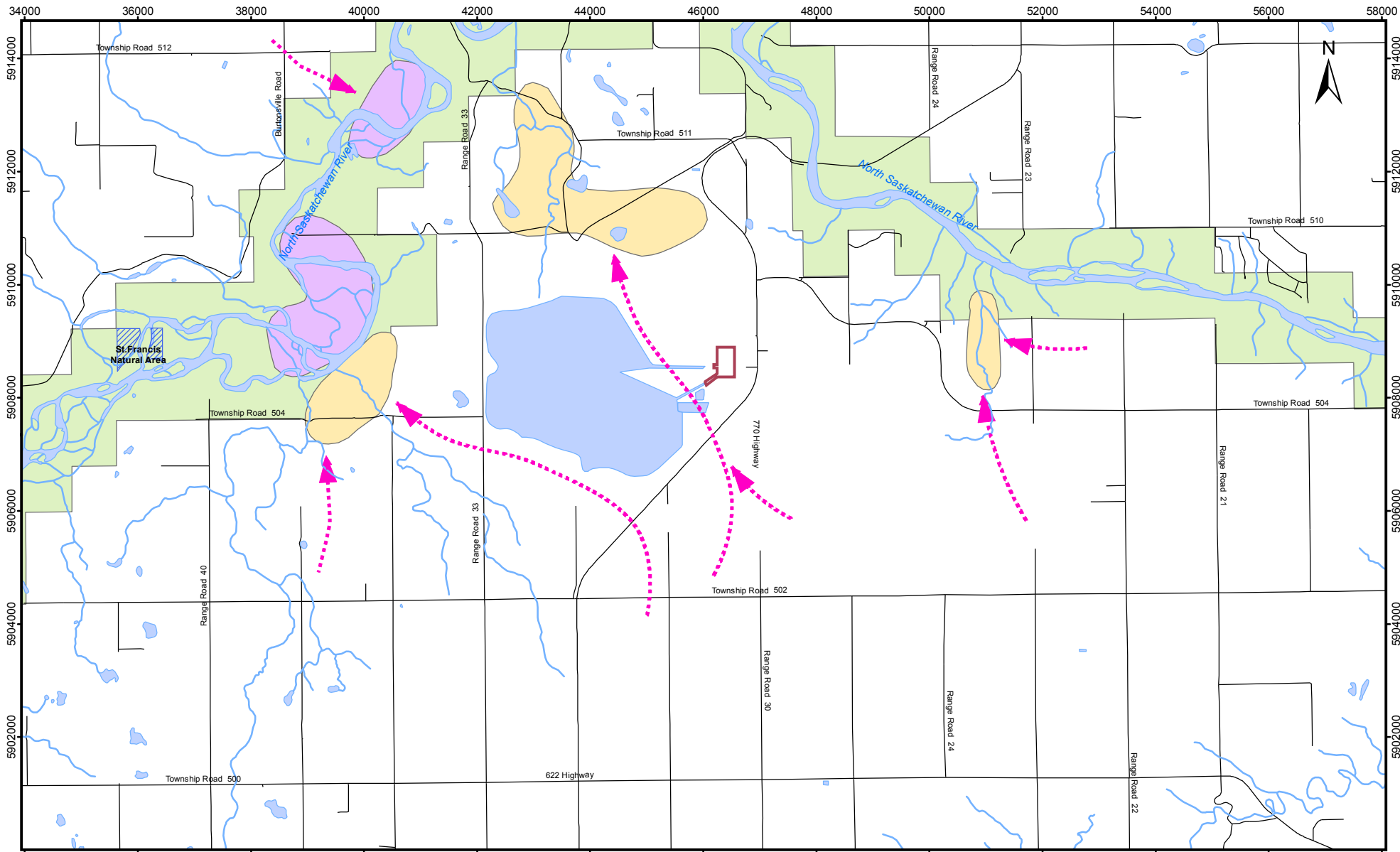
There are several mammal species that could potentially occur in the project area (Appendix C). The most abundant ungulate species are white-tailed deer (*Odocoileus virginianus*), followed by mule deer (*Odocoileus hemionus hemionus*), moose (*Alces alces*), and elk (*Cervus elaphus*) (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011). Figure 3 depicts areas identified as ungulate concentration areas in the environmental assessment conducted for the Genesee Mine Extension Project. A movement corridor is indicated passing immediately to the west of the GGS although this is suspected to not accurately reflect ungulate movement in that particular area.

Other species include muskrat (*Ondatra zibethicus*) and red-backed voles (*Myodes gapperi*) (Capital Power GP Holdings Inc., Prairie Mines and Royalty Ltd., 2011).

## 3.4.4 Species of Concern

Species with special conservation status have the potential to occur within the general area of the Project based on published species ranges (Alberta Environment and Sustainable Resource Development, 2012; Canada, 2011). For the list of species with special conservation status potentially occurring in the area, see Appendix C.

Canada warbler (*Oporornis agilis*), common nighthawk (*Chordeiles minor*), loggerhead shrike (*Lanius ludovicianus*), olive-sided flycatcher (*Contopus cooperi*), peregrine falcon (*Falco peregrinus*), rusty blackbird (*Euphagus carolinus*), short-eared owl (*Asio flammeus*), Sprague's pipit (*Anthus spragueii*), yellow rail (*Coturnicops noveboracensis*), and Western toad (*Anaxyrus boreas*) are the SARA, Schedule 1 species having the potential to occur in the area based on published species ranges. However, suitable habitat does not exist at the project site for these species.



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Projection: 10TM AEP Resource Datum:NAD 83  
 Imagery obtained from CPC, 2011.

- ▶ Movement Corridor
- Mule Deer Concentration Area
- White-tailed Deer Concentration Area
- Environmentally Sensitive Areas
- Waterbody
- Natural Area
- GGS Units 4 and 5
- Road
- Watercourse

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Figure No.  
**3**

Title  
**UNGULATE CONCENTRATION AREAS  
 AND MOVEMENT CORRIDORS  
 IN THE GENESEE AREA**



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# GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

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## 3.5 FISH AND FISH HABITAT

A FWMS data search identified several fish species found within 5 km of the project area including: brook stickleback (*Culaea inconstans*), burbot (*Lota lota*), fathead minnow (*Pimephales promelas*), goldeye (*Hiodon alosoides*), lake chub (*Couesius plumbeus*), lake sturgeon (*Acipenser fulvescens*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*), northern pike (*Esox Lucius*), sauger (*Sander Canadensis*), shorthead redhorse (*Moxostoma macrolepidotum*), silver redhorse (*Moxostoma anisurum*), spottail shiner (*Notropis hudsonius*), trout-perch (*Percopsis omiscomaycus*), walleye (*Sander vitreus*), and white sucker (*Catostomus commersonii*) (Appendix B and Appendix C). The NSR is the primary waterbody providing fish habitat in general area of the proposed project site.

### 3.5.1 North Saskatchewan River

Riparian vegetation along the NSR is comprised primarily of grasses, shrubs and mixed forest with several sections bordered by agricultural developments and residences (Hatfield Consultants, 2011). Overhead canopy cover is low and limited to the immediate shoreline. Instream cover is also low and consists of deep pools with small amounts of instream vegetation during high flows. Substrate composition is primarily dominated by fines and sands overlain with gravel and cobble.

Fish resources in the NSR are comprised of small-bodied, large-bodied, and sport-fish species. Species identified in a 2009/2010 Fish Resource Study (Hatfield Consultants, 2011) were emerald shiner (*Notropis atherinoides*), goldeye, lake sturgeon, longnose sucker, mountain whitefish (*Prosopium williamsoni*), northern pike, river shiner (*Notropis belnii*), sauger, shorthead redhorse, spottail shiner, trout-perch, walleye and white sucker.

### 3.5.2 Species of Concern

The NSR is identified as a Class A watercourse due to the presence of significant amounts of sturgeon habitat near the project site (Hatfield Consultants, 2011). According to the Species at Risk Public Registry, lake sturgeon are classified as endangered under COSEWIC and are the only fish species identified by SARA as a species of concern in the general area of the Project (Appendix C). ESRD has also identified goldeye as a species of concern, but they classify this species as secure (Alberta Environment and Sustainable Resource Development, 2012).

## 3.6 LAND AND NATURAL RESOURCE USE

The town of Warburg, located 16 km south, is the closest urban center to the project site. The nearest aboriginal community to the project area is the Paul First Nation. It is located approximately 16 km north of the Project on the east shore of Lake Wabamun.

The land use in the immediate vicinity of the project area includes; power generation, coal mining and agriculture. The Project will be sited directly adjacent to the existing GGS (Units 1-3).

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A coal mine and cooling pond are also associated with the GGS. The Genesee Mine is located to the south of the project site. The coal mine occupies approximately 7252 ha and supplies coal to the existing GGS. Genesee cooling pond and GGS are located entirely within a first-order watershed of the NSR, locally known as Genesee Creek. In 2002, Alberta Environment declared that the cooling pond is not a fishery. A water intake and cooling water discharge structure is located on the right downstream bank of the NSR, approximately 2 km to the west-northwest of the cooling pond (Figure 2). Existing uses of the NSR upstream and downstream of the Project include water supply, and in-stream recreational uses such as fishing and boating. The NSR also receives stormwater and treated sewage from municipalities. Groundwater wells near the Project are used for water supply.

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## 4.0 Conclusion

The proposed location for the Project is a brownfield site that was disturbed in the mid-2000s as part of construction of the Genesee Phase 3 Project. The proposed project location is well within the existing plant fence line of the existing GGS. The site remains disturbed and is currently being utilized as a location for siting portable office trailers and is a laydown area for equipment as part of the ongoing operation of the existing GGS. The site is a level area built up with gravel fill. Given the high level of existing disturbance in the proposed project area, the land in the immediate vicinity of the Project, an active industrial facility, is considered to have low habitat value for wildlife.

The proposed Project also makes effective use of the existing GGS infrastructure, specifically, utilization of the existing river water intake, pumphouse, cooling pond, and point of discharge to the NSR. Utilizing the existing GGS infrastructure will further reduce any potential environmental impacts due to the Project. No additional diversion of water from the NSR is required for the Project beyond the volumes already permitted under the current Licences to Divert Water issued by ESRD for the existing GGS.

Marginal changes in the cooling pond water temperature (slightly higher) are anticipated due to the Project. This will result in a reduction of discharge back to the NSR because of increased evaporative losses from the cooling pond. Given this comparatively small net reduction in volume of discharge anticipated to be released back to the NSR, changes to fish and fish habitat are not expected.



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**APPENDIX A  
ACIMS SEARCH**

# Search ACIMS Data

Updated: Nov. 21, 2012

Today: Aug. 21, 2013

1 Select Requester: \* ?  
 Consultant ▾

2 Select Reason for Request: \*  
 Environmental Assessment ▾

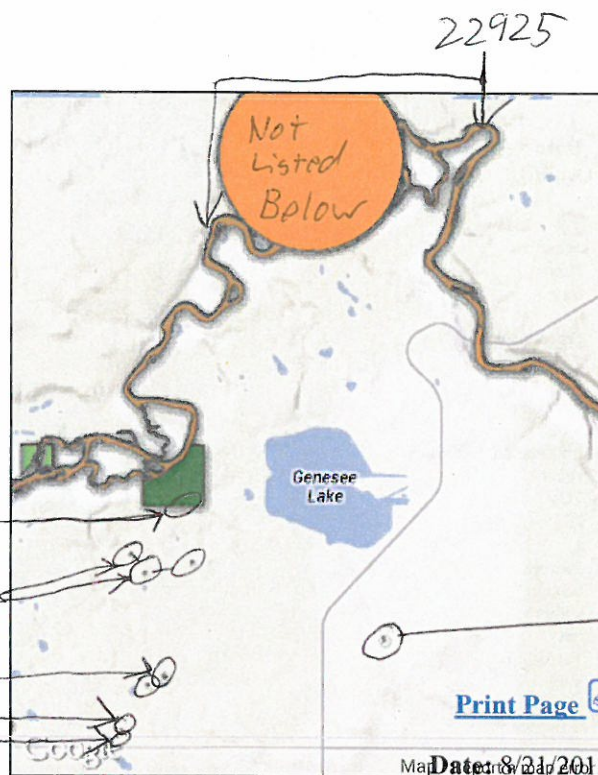
3 SEC TWP RGE MER  
 -- 050 03 W5M Submit

(option)  
[Convert Lat/Long to Township](#)

**Layers**

- Element Occurrences ?  
 (part one, non-sensitive)
- Element Occurrence ?  
 (part two, sensitive)
- Protected Areas ?
- Crown Reservation/Notation ?

\* Required



**Requestor:** Consultant  
**Reason for Request:** Environmental Assessment  
**SEC:** -- **TWP:** 050 **RGE:** 03 **MER:** 5

**Note:** If the map is not displaying 'Refresh' your browser by pushing F5 or Ctrl-R (on PC) or Cmd-R (on Mac)

## Table of Results

Sensitive EOs: 0 (Data Updated: November 2012)

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
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No Sensitive EOs Found: Next Steps - [FAQs #13](#)

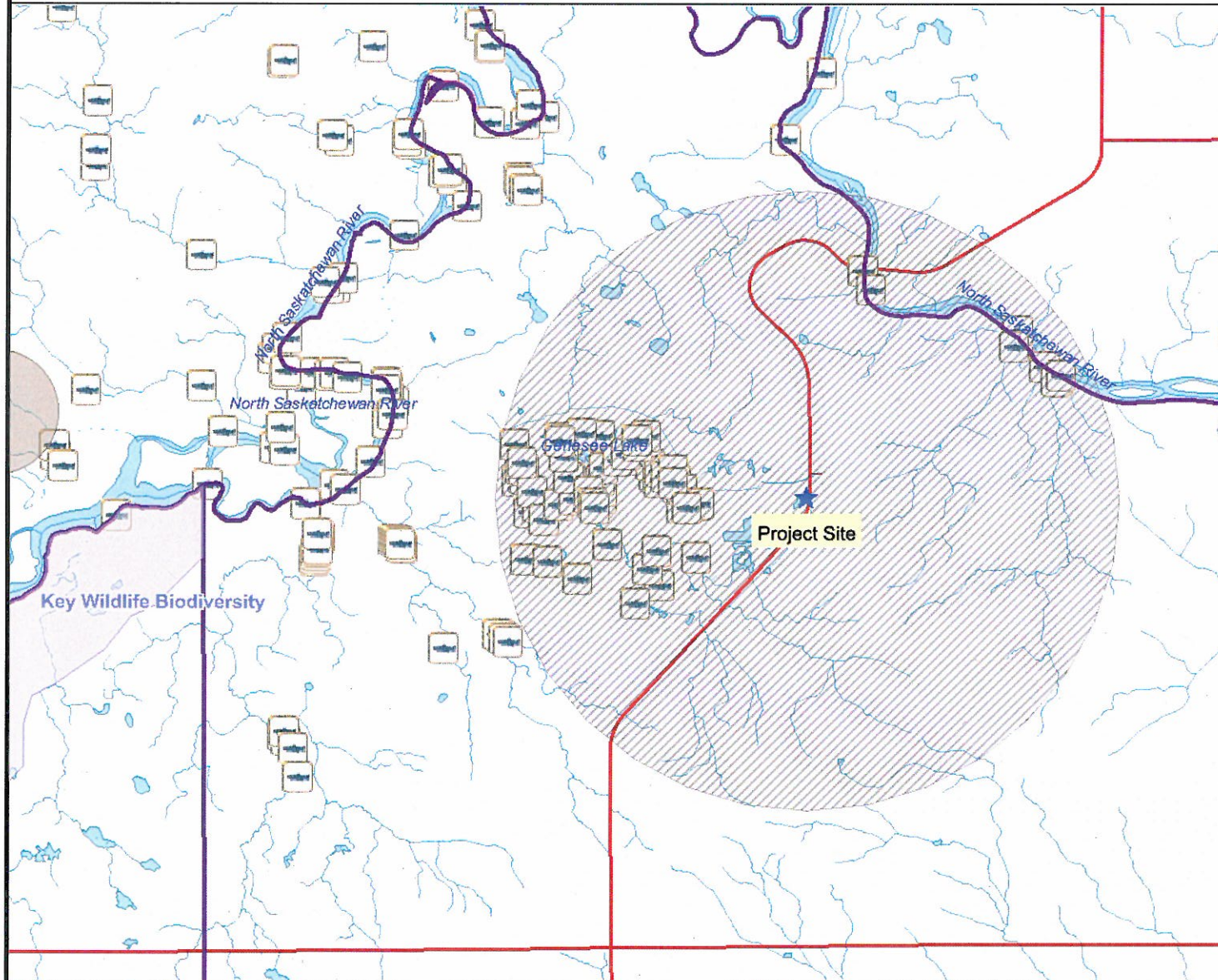
Non-sensitive EOs: 13 (Data Updated: November 2012)

M-RR-TTT-SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D
5-03-050-06	16495	NBMUS81030	S2	Plagiomnium ciliare	moss	6/3/2006
5-03-050-06	16496	NBMUS44080	S1	Leptodictyum humile	moss	6/3/2006
5-03-050-08	22855	PDSAX07030	S3?	Chrysosplenium iowense	golden saxifrage	6/9/2009
5-03-050-12	22955	PDSAX07030	S3?	Chrysosplenium iowense	golden saxifrage	6/5/2009
5-03-050-17	22856	PDSAX07030	S3?	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-19	22856	PDSAX07030	S3?	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-20	22856	PDSAX07030	S3?	Chrysosplenium iowense	golden saxifrage	6/4/2009
5-03-050-29	19122	NBMUS0E010	S2	Aongstroemia longipes	spring moss	8/27/2009
5-03-050-29	21848	NBHEP330D0	S2	Scapania glaucocephala	liverwort	7/26/2010
5-03-050-29	22925	IMGASN3050	SU	Ferrissia rivularis	Creeping Ancyloid	2001-XX-XX
5-03-050-30	22925	IMGASN3050	SU	Ferrissia rivularis	Creeping Ancyloid	2001-XX-XX
5-03-050-31	22925	IMGASN3050	SU	Ferrissia rivularis	Creeping Ancyloid	2001-XX-XX
5-03-050-32	22925	IMGASN3050	SU	Ferrissia rivularis	Creeping Ancyloid	2001-XX-XX

Next Steps: [FAQs #13](#)

**APPENDIX B**  
**FWMIS SEARCH**

Created Wed Aug 21 11:50:53 MDT 2013



### Legend

- Sensitive Raptor Ranges**
  - Bald Eagle
  - Ferruginous Hawk
  - Golden Eagle
  - Peregrine Falcon
  - Prairie Falcon
- Key Wildlife and Biodiversity Zone
- Wildlife Management Area Contacts
- Fisheries Management Area Contacts
- Fish Inventory
- Water

Display may contain: Base data provided by Spatial Data Warehouse Ltd. GeoEye, all rights reserved.

Information as depicted is subject to change, therefore the Government of Alberta assumes no responsibility for discrepancies at time of use.

2012 Government of Alberta

**Wildlife Inventory**

AMERICAN WHITE PELICAN  
BALD EAGLE  
BARN SWALLOW  
BARRED OWL  
BOREAL TOAD  
COMMON YELLOWTHROAT  
GOLDEN EAGLE  
GREEN-WINGED TEAL  
HORNED GREBE  
LEAST FLYCATCHER  
LESSER SCAUP  
NORTHERN GOSHAWK  
NORTHERN HARRIER  
NORTHERN PINTAIL  
PEREGRINE FALCON  
PIED-BILLED GREBE  
PILEATED WOODPECKER  
SORA  
SPRAGUE'S PIPIT  
SWAINSON'S HAWK  
WESTERN GREBE  
WESTERN Tanager

**Fish Inventory**

BROOK STICKLEBACK  
BURBOT  
FATHEAD MINNOW  
GOLDEYE  
LAKE CHUB  
LAKE STURGEON  
LONGNOSE DACE  
LONGNOSE SUCKER  
NORTHERN PIKE  
SAUGER  
SHORTHEAD REDHORSE  
SILVER REDHORSE  
SPOTTAIL SHINER  
TROUT-PERCH  
UNKNOWN  
WALLEYE  
WHITE SUCKER

**Buffer extent**

Centroid (X,Y):	546876, 5908365
Central Meridian:	-115.0
Centroid (Qtr Sec Twp Rng Mer):	SE 25 50 3 5
Buffer radius:	5 kilometers

**APPENDIX C**  
**WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE**  
**AREA**



Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
<b>Birds</b>					
Alder Flycatcher	<i>Empidonax alnorum</i>	Secure	N/A	N/A	X
American Avocet	<i>Recurvirostra americana</i>	Secure	N/A	N/A	X
American Bittern	<i>Botaurus lentiginosus</i>	Sensitive	N/A	N/A	
American Coot	<i>Fulica americana</i>	Secure	N/A	Not at Risk	X
American Crow	<i>Corvus brachyrhynchos</i>	Secure	N/A	N/A	X
American Goldfinch	<i>Spinus tristis</i>	Secure	N/A	N/A	X
American Green-winged Teal	<i>Anas crecca</i>	Sensitive	N/A	N/A	X
American Kestrel	<i>Falco sparverius</i>	Sensitive	N/A	N/A	X
American Redstart	<i>Setophaga ruticilla</i>	Secure	N/A	N/A	X
American Robin	<i>Turdus migratorius</i>	Secure	N/A	N/A	X
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	Secure	N/A	N/A	
American Tree Sparrow	<i>Spizella arborea</i>	Secure	N/A	N/A	X
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Sensitive	N/A	Not at Risk	X
American Wigeon	<i>Anas americana</i>	Secure	N/A	N/A	X
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Sensitive	N/A	Not at Risk	X
Baltimore Oriole	<i>Icterus galbula</i>	Sensitive	N/A	N/A	X
Bank Swallow	<i>Riparia riparia</i>	Secure	N/A	N/A	
Barn Swallow	<i>Hirundo rustica</i>	Sensitive	N/A	Threatened	X
Barred Owl	<i>Strix varia</i>	Sensitive	N/A	N/A	X
Bay-breasted Warbler	<i>Setophaga castanea</i>	Sensitive	N/A	N/A	
Belted Kingfisher	<i>Megaceryle alcyon</i>	Secure	N/A	N/A	
Black Tern	<i>Chlidonias niger</i>	Sensitive	N/A	Not at Risk	
Black-and-white Warbler	<i>Mniotilta varia</i>	Secure	N/A	N/A	X
Black-backed Woodpecker	<i>Picoides arcticus</i>	Sensitive	N/A	N/A	
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Undetermined	N/A	N/A	
Black-billed Magpie	<i>Pica hudsonia</i>	Secure	N/A	N/A	X
Blackburnian Warbler	<i>Setophaga fusca</i>	Sensitive	N/A	N/A	
Black-capped Chickadee	<i>Poecile atricapillus</i>	Secure	N/A	N/A	X
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	Sensitive	N/A	N/A	
Blackpoll Warbler	<i>Setophaga striata</i>	Secure	N/A	N/A	
Black-throated Green Warbler	<i>Setophaga virens</i>	Sensitive	N/A	N/A	
Blue Jay	<i>Cyanocitta cristata</i>	Secure	N/A	N/A	X
Blue-headed Vireo	<i>Vireo solitarius</i>	Secure	N/A	N/A	X
Blue-winged Teal	<i>Anas discors</i>	Secure	N/A	N/A	X
Bobolink	<i>Dolichonyx oryzivorus</i>	Sensitive	N/A	Threatened	
Bohemian Waxwing	<i>Bombycilla garrulus</i>	Secure	N/A	N/A	
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	Secure	N/A	N/A	
Boreal Chickadee	<i>Poecile hudsonicus</i>	Secure	N/A	N/A	X
Boreal Owl	<i>Aegolius funereus</i>	Secure	N/A	N/A	X
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	Secure	N/A	N/A	X
Broad-winged Hawk	<i>Buteo platypterus</i>	Sensitive	N/A	N/A	
Brown Creeper	<i>Certhia americana</i>	Sensitive	N/A	N/A	
Brown-headed Cowbird	<i>Molothrus ater</i>	Secure	N/A	N/A	X
Bufflehead	<i>Bucephala albeola</i>	Secure	N/A	N/A	X
California Gull	<i>Larus californicus</i>	Secure	N/A	N/A	X
Canada Goose	<i>Branta canadensis</i>	Secure	N/A	N/A	X
Canada Warbler	<i>Cardellina canadensis</i>	Sensitive	Schedule 1, Threatened	Threatened	
Canvasback	<i>Aythya valisineria</i>	Secure	N/A	N/A	X
Cape May Warbler	<i>Setophaga tigrina</i>	Sensitive	N/A	N/A	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Secure	N/A	N/A	X
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	Secure	N/A	N/A	
Chipping Sparrow	<i>Spizella passerina</i>	Secure	N/A	N/A	X
Cinnamon Teal	<i>Anas cyanoptera</i>	Secure	N/A	N/A	X
Clay-colored Sparrow	<i>Spizella pallida</i>	Secure	N/A	N/A	X
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Secure	N/A	N/A	X
Common Goldeneye	<i>Bucephala clangula</i>	Secure	N/A	N/A	X
Common Grackle	<i>Quiscalus quiscula</i>	Secure	N/A	N/A	
Common Loon	<i>Gavia immer</i>	Secure	N/A	Not at Risk	X
Common Merganser	<i>Mergus merganser</i>	Secure	N/A	N/A	X
Common Nighthawk	<i>Chordeiles minor</i>	Sensitive	Schedule 1, Threatened	Threatened	

GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Appendix C Wildlife Species Potentially Occurring in the Area

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Common Raven	<i>Corvus corax</i>	Secure	N/A	N/A	X
Common Redpoll	<i>Acanthis flammea</i>	Secure	N/A	N/A	X
Common Tern	<i>Sterna hirundo</i>	Secure	N/A	Not at Risk	
Common Yellowthroat	<i>Geothlypis trichas</i>	Sensitive	N/A	N/A	X
Connecticut Warbler	<i>Oporornis agilis</i>	Secure	N/A	N/A	
Cooper's Hawk	<i>Accipiter cooperii</i>	Secure	N/A	Not at Risk	X
Dark-eyed Junco	<i>Junco hyemalis</i>	Secure	N/A	N/A	X
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Secure	N/A	N/A	X
Downy Woodpecker	<i>Picoides pubescens</i>	Secure	N/A	Not at Risk	X
Eared Grebe	<i>Podiceps nigricollis</i>	Secure	N/A	N/A	X
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Secure	N/A	N/A	X
Eastern Phoebe	<i>Sayornis phoebe</i>	Sensitive	N/A	N/A	X
European Starling	<i>Sturnus vulgaris</i>	N/A	N/A	N/A	X
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Secure	N/A	N/A	
Forster's Tern	<i>Sterna forsteri</i>	Sensitive	N/A	Data Deficient	
Fox Sparrow	<i>Passerella iliaca</i>	Secure	N/A	N/A	
Franklin's Gull	<i>Leucophaeus pipixcan</i>	Secure	N/A	N/A	X
Gadwall	<i>Anas strepera</i>	Secure	N/A	N/A	X
Golden Eagle	<i>Aquila chrysaetos</i>	Secure	N/A	N/A	X
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Secure	N/A	N/A	X
Gray Catbird	<i>Dumetella carolinensis</i>	Secure	N/A	N/A	X
Gray Jay	<i>Perisoreus canadensis</i>	Secure	N/A	N/A	X
Great Blue Heron	<i>Ardea herodias</i>	Sensitive	N/A	N/A	X
Great Grey Owl	<i>Strix nebulosa</i>	Sensitive	N/A	Not at Risk	
Great Horned Owl	<i>Bubo virginianus</i>	Secure	N/A	N/A	X
Greater Scaup	<i>Aythya marila</i>	Secure	N/A	N/A	X
Greater White-fronted Goose	<i>Anser albifrons</i>	Secure	N/A	N/A	
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Secure	N/A	N/A	
Gyrfalcon	<i>Falco rusticolus</i>	Secure	N/A	Not at Risk	
Hairy Woodpecker	<i>Picoides villosus</i>	Secure	N/A	N/A	X
Harris's Sparrow	<i>Zonotrichia querula</i>	Secure	N/A	N/A	
Hermit Thrush	<i>Catharus guttatus</i>	Secure	N/A	N/A	X
Herring Gull	<i>Larus argentatus</i>	Secure	N/A	N/A	X
Hooded Merganser	<i>Lophodytes cucullatus</i>	Secure	N/A	N/A	X
Horned Grebe	<i>Podiceps auritus</i>	Sensitive	N/A	Special Concern	X
Horned Lark	<i>Eremophila alpestris</i>	Secure	N/A	N/A	X
House Finch	<i>Carpodacus mexicanus</i>	Secure	N/A	N/A	
House Wren	<i>Troglodytes aedon</i>	Secure	N/A	N/A	X
Killdeer	<i>Charadrius vociferus</i>	Secure	N/A	N/A	X
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	Secure	N/A	N/A	X
Least Flycatcher	<i>Empidonax minimus</i>	Sensitive	N/A	N/A	X
Least Sandpiper	<i>Calidris minutilla</i>	Secure	N/A	N/A	
Lesser Scaup	<i>Aythya affinis</i>	Sensitive	N/A	N/A	X
Lesser Yellowlegs	<i>Tringa flavipes</i>	Secure	N/A	N/A	X
Lincoln's Sparrow	<i>Melospiza lincolni</i>	Secure	N/A	N/A	X
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Sensitive	Schedule 1, Threatened	Threatened	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	Secure	N/A	N/A	
Long-eared Owl	<i>Asio otus</i>	Secure	N/A	N/A	X
Magnolia Warbler	<i>Setophaga magnolia</i>	Secure	N/A	N/A	X
Mallard	<i>Anas platyrhynchos</i>	Secure	N/A	N/A	X
Marbled Godwit	<i>Limosa fedoa</i>	Secure	N/A	N/A	X
Marsh Wren	<i>Cistothorus palustris</i>	Secure	N/A	N/A	
Merlin	<i>Falco columbarius</i>	Secure	N/A	Not at Risk	X
Mountain Bluebird	<i>Sialia currucoides</i>	Secure	N/A	N/A	X
Mourning Dove	<i>Zenaida macroura</i>	Secure	N/A	N/A	X
Mourning Warbler	<i>Geothlypis philadelphia</i>	Secure	N/A	N/A	X
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	Secure	N/A	Not at Risk	X
Northern Flicker	<i>Colaptes auratus</i>	Secure	N/A	N/A	X
Northern Goshawk	<i>Accipiter gentilis</i>	Sensitive	N/A	Not at Risk	X
Northern Harrier	<i>Circus cyaneus</i>	Sensitive	N/A	Not at Risk	X
Northern Hawk Owl	<i>Surnia ulula</i>	Secure	N/A	Not at Risk	

GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Appendix C Wildlife Species Potentially Occurring in the Area

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Northern Pintail	<i>Anas acuta</i>	Sensitive	N/A	N/A	X
Northern Pygmy Owl	<i>Glaucidium gnoma</i>	Sensitive	N/A	N/A	
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Secure	N/A	N/A	
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Secure	N/A	N/A	X
Northern Shoveler	<i>Anas clypeata</i>	Secure	N/A	N/A	X
Northern Shrike	<i>Lanius excubitor</i>	Secure	N/A	N/A	X
Northern Waterthrush	<i>Parlesia noveboracensis</i>	Secure	N/A	N/A	
Olive-sided Flycatcher	<i>Contopus cooperi</i>	May Be At Risk	Schedule 1, Threatened	Threatened	
Orange-crowned Warbler	<i>Vermivora celata</i>	Secure	N/A	N/A	X
Osprey	<i>Pandion haliaetus</i>	Sensitive	N/A	N/A	
Ovenbird	<i>Seiurus aurocapilla</i>	Secure	N/A	N/A	X
Palm Warbler	<i>Setophaga palmarum</i>	Secure	N/A	N/A	X
Peregrine Falcon	<i>Falco peregrinus</i>	At Risk	Schedule 1, Special Concern	Special Concern	X
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Secure	N/A	N/A	X
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Sensitive	N/A	N/A	X
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Sensitive	N/A	N/A	X
Pine Grosbeak	<i>Pinicola enucleator</i>	Secure	N/A	N/A	X
Pine Siskin	<i>Spinus pinus</i>	Secure	N/A	N/A	X
Prairie Falcon	<i>Falco mexicanus</i>	Sensitive	N/A	Not at Risk	
Purple Finch	<i>Carpodacus purpureus</i>	Secure	N/A	N/A	X
Purple Martin	<i>Progne subis</i>	Sensitive	N/A	N/A	
Red Crossbill	<i>Loxia curvirostra</i>	Secure	N/A	N/A	
Red-breasted Merganser	<i>Mergus serrator</i>	Secure	N/A	N/A	
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Secure	N/A	N/A	X
Red-eyed Vireo	<i>Vireo olivaceus</i>	Secure	N/A	N/A	X
Redhead	<i>Aythya americana</i>	Secure	N/A	N/A	X
Red-necked Grebe	<i>Podiceps grisegena</i>	Secure	N/A	Not at Risk	X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Secure	N/A	Not at Risk	X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Secure	N/A	N/A	X
Ring-billed Gull	<i>Larus delawarensis</i>	Secure	N/A	N/A	X
Ring-necked Duck	<i>Aythya collaris</i>	Secure	N/A	N/A	X
Rock Pigeon (Exotic)	<i>Columba livia</i>	N/A	N/A	N/A	X
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Secure	N/A	N/A	X
Rough-legged Hawk	<i>Buteo lagopus</i>	Secure	N/A	N/A	X
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Secure	N/A	N/A	X
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Secure	N/A	N/A	
Ruddy Duck	<i>Oxyura jamaicensis</i>	Secure	N/A	N/A	X
Ruffed Grouse	<i>Bonasa umbellus</i>	Secure	N/A	N/A	X
Rusty Blackbird	<i>Euphagus carolinus</i>	Sensitive	Schedule 1, Special Concern	Special Concern	
Sandhill Crane	<i>Grus canadensis</i>	Sensitive	N/A	N/A	X
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Secure	N/A	N/A	X
Say's Phoebe	<i>Sayornis saya</i>	Secure	N/A	N/A	
Sedge Wren	<i>Cistothorus platensis</i>	Sensitive	N/A	Not at Risk	
Semipalmated Sandpiper	<i>Calidris pusilla</i>	Secure	N/A	N/A	
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Secure	N/A	Not at Risk	X
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	Sensitive	N/A	N/A	X
Short-eared Owl	<i>Asio flammeus</i>	May Be at Risk	Schedule 1, Special Concern	Special Concern	
Snow Bunting	<i>Plectrophenax nivalis</i>	Secure	N/A	N/A	X
Snow Goose	<i>Chen caerulescens</i>	Secure	N/A	N/A	X
Snowy Owl	<i>Bubo scandiacus</i>	Secure	N/A	N/A	X
Solitary Sandpiper	<i>Tringa solitaria</i>	Secure	N/A	N/A	X
Song Sparrow	<i>Melospiza melodia</i>	Secure	N/A	N/A	X
Sora	<i>Porzana carolina</i>	Sensitive	N/A	N/A	X
Spotted Sandpiper	<i>Actitis macularius</i>	Secure	N/A	N/A	X
Sprague's Pipit	<i>Anthus spragueii</i>	Sensitive	Schedule 1, Threatened	Threatened	X
Swainson's Hawk	<i>Buteo swainsoni</i>	Sensitive	N/A	N/A	X
Swainson's Thrush	<i>Catharus ustulatus</i>	Secure	N/A	N/A	X
Swamp Sparrow	<i>Melospiza georgiana</i>	Secure	N/A	N/A	X
Tennessee Warbler	<i>Vermivora peregrina</i>	Secure	N/A	N/A	X
Townsend's Solitaire	<i>Myadestes townsendi</i>	Secure	N/A	N/A	
Tree Swallow	<i>Tachycineta bicolor</i>	Secure	N/A	N/A	X

GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Appendix C Wildlife Species Potentially Occurring in the Area

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
Trumpeter Swan	<i>Cygnus buccinator</i>	At Risk	N/A	Not at Risk	
Tundra Swan	<i>Cygnus columbianus</i>	Secure	N/A	N/A	X
Upland Sandpiper	<i>Bartramia longicauda</i>	Sensitive	N/A	N/A	
Veery	<i>Catharus fuscescens</i>	Secure	N/A	N/A	
Vesper Sparrow	<i>Pooecetes gramineus</i>	Secure	N/A	N/A	X
Virginia Rail	<i>Rallus limicola</i>	Undetermined	N/A	N/A	
Warbling Vireo	<i>Vireo gilvus</i>	Secure	N/A	N/A	X
Western Grebe	<i>Aechmophorus occidentalis</i>	Sensitive	N/A	N/A	X
Western Meadowlark	<i>Sturnella neglecta</i>	Secure	N/A	N/A	X
Western Tanager	<i>Piranga ludoviciana</i>	Sensitive	N/A	N/A	X
Western Wood-pewee	<i>Contopus sordidulus</i>	Sensitive	N/A	N/A	X
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Secure	N/A	N/A	X
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	Secure	N/A	N/A	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Secure	N/A	N/A	X
White-winged Crossbill	<i>Loxia leucoptera</i>	Secure	N/A	N/A	X
White-winged Scoter	<i>Melanitta fusca</i>	Sensitive	N/A	N/A	
Willet	<i>Tringa semipalmata</i>	Secure	N/A	N/A	
Wilson's Phalarope	<i>Phalaropus tricolor</i>	Secure	N/A	N/A	X
Wilson's Snipe	<i>Gallinago delicata</i>	Secure	N/A	N/A	X
Wilson's Warbler	<i>Cardellina pusilla</i>	Secure	N/A	N/A	
Winter Wren	<i>Troglodytes troglodytes</i>	Secure	N/A	N/A	X
Yellow Rail	<i>Coturnicops noveboracensis</i>	Undetermined	Schedule 1, Special Concern	Special Concern	
Yellow Warbler	<i>Cardellina petechia</i>	Secure	N/A	N/A	X
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Undetermined	N/A	N/A	
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Secure	N/A	N/A	X
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	Secure	N/A	N/A	
Yellow-rumped Warbler	<i>Setophaga coronata</i>	Secure	N/A	N/A	X

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
<b>Mammals</b>					
American Badger	<i>Taxidea taxus</i>	Sensitive	N/A	N/A	X
American Mink	<i>Neovison vison</i>	Secure	N/A	N/A	
Arctic Shrew	<i>Sorex arcticus</i>	Secure	N/A	N/A	
Beaver	<i>Castor canadensis</i>	Secure	N/A	N/A	
Big Brown Bat	<i>Eptesicus fuscus</i>	Secure	N/A	N/A	
Black Bear	<i>Ursus americanus</i>	Secure	N/A	N/A	
Canada Lynx	<i>Lynx canadensis</i>	Sensitive	N/A	N/A	
Common Porcupine	<i>Erethizon dorsatum</i>	Secure	N/A	N/A	X
Common Raccoon	<i>Procyon lotor</i>	Secure	N/A	N/A	
Cougar	<i>Puma concolor</i>	Secure	N/A	N/A	
Coyote	<i>Canis latrans</i>	Secure	N/A	N/A	X
Deer Mouse	<i>Peromyscus maniculatus</i>	Secure	N/A	N/A	X
Dusky Shrew	<i>Sorex monticolus</i>	Secure	N/A	N/A	
Eastern Heather Vole	<i>Phenacomys ungava</i>	Secure	N/A	N/A	
Elk	<i>Cervus elaphus</i>	Secure	N/A	N/A	X
Ermine	<i>Mustela erminea</i>	Secure	N/A	N/A	
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>	Undetermined	N/A	N/A	
Gray Wolf	<i>Canis lupus</i>	Secure	N/A	N/A	
Hoary Bat	<i>Lasiurus cinereus</i>	Sensitive	N/A	N/A	
Least Chipmunk	<i>Neotamias minimus</i>	Secure	N/A	N/A	
Least Weasel	<i>Mustela nivalis</i>	Secure	N/A	N/A	X
Little Brown Bat	<i>Myotis lucifugus</i>	Secure	N/A	N/A	
Long-eared Bat	<i>Myotis evotis</i>	Secure	N/A	N/A	
Long-tailed Weasel	<i>Mustela frenata</i>	May Be At Risk	N/A	Not at Risk	
Masked Shrew	<i>Sorex cinereus</i>	Secure	N/A	N/A	
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	Secure	N/A	N/A	
Meadow Vole	<i>Microtus pennsylvanicus</i>	Secure	N/A	N/A	
Moose	<i>Alces americanus</i>	Secure	N/A	N/A	X
Mule Deer	<i>Odocoileus hemionus</i>	Secure	N/A	N/A	X
Muskrat	<i>Ondatra zibethicus</i>	Secure	N/A	N/A	X
Northern Bog Lemming	<i>Synaptomys borealis</i>	Secure	N/A	N/A	
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	Secure	N/A	N/A	X
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	May Be At Risk	N/A	N/A	
Northern Pocket Gopher	<i>Thomomys talpoides</i>	Secure	N/A	N/A	
Prairie Vole	<i>Microtus ochrogaster</i>	Secure	N/A	N/A	
Pygmy Shrew	<i>Sorex hoyi</i>	Secure	N/A	N/A	
Red Bat	<i>Lasiurus borealis</i>	Sensitive	N/A	N/A	
Red Fox	<i>Vulpes vulpes</i>	Secure	N/A	N/A	X
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Secure	N/A	N/A	X
Richardson's Ground Squirrel	<i>Spermophilus richardsonii</i>	Secure	N/A	N/A	
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Sensitive	N/A	N/A	
Snowshoe Hare	<i>Lepus americanus</i>	Secure	N/A	N/A	
Southern Red-backed Vole	<i>Myodes gapperi</i>	Secure	N/A	N/A	X
Striped Skunk	<i>Mephitis mephitis</i>	Secure	N/A	N/A	
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecimlineatus</i>	Undetermined	N/A	N/A	
Water Shrew	<i>Sorex palustris</i>	Secure	N/A	N/A	
Western Jumping Mouse	<i>Zapus princeps</i>	Secure	N/A	N/A	
White-tailed Deer	<i>Odocoileus virginianus</i>	Secure	N/A	N/A	X
White-tailed Jack Rabbit	<i>Lepus townsendii</i>	Secure	N/A	N/A	
Woodchuck	<i>Marmota monax</i>	Secure	N/A	N/A	
<b>Amphibians</b>					
Barred Tiger Salamander	<i>Ambystoma mavortium</i>	Secure	N/A	N/A	
Boreal Chorus Frog	<i>Pseudacris maculata</i>	Secure	N/A	N/A	X
Canadian Toad	<i>Anaxyrus hemiophrys</i>	May Be At Risk	N/A	Not at Risk	
Western Toad	<i>Anaxyrus boreas</i>	Sensitive	schedule 1, Special Concern	Special Concern	X
Wood Frog	<i>Lithobates sylvaticus</i>	Secure	N/A	N/A	X
<b>Reptiles</b>					
Plains Garter Snake	<i>Thamnophis radix</i>	Sensitive	N/A	N/A	
Red-sided Garter Snake	<i>Thamnophis sirtalis</i>	Sensitive	N/A	N/A	

GENESEE GENERATING STATION: UNITS 4 AND 5 ENVIRONMENTAL OVERVIEW REPORT

Appendix C Wildlife Species Potentially Occurring in the Area

Common Name	Scientific Name	ESRD 2010	SARA	COSEWIC	OBSERVED
<b>Fish</b>					
Brook Stickleback	<i>Culaea inconstans</i>	Secure	N/A	N/A	X
Burbot	<i>Lota lota</i>	Secure	N/A	N/A	
Emerald Shiner	<i>Notropis atherinoides</i>	Secure	N/A	N/A	X
Fathead Minnow	<i>Pimephales promelas</i>	Secure	N/A	N/A	X
Goldeye	<i>Hiodon alosoides</i>	Secure	N/A	N/A	X
Lake Chub	<i>Couesius plumbeus</i>	Secure	N/A	N/A	X
Lake Sturgeon	<i>Acipenser fulvescens</i>	Undetermined	N/A	Endangered	
Long Nose Dace	<i>Rhinichthys cataractae</i>	Secure	N/A	N/A	X
Long Nose Sucker	<i>Catostomus catostomus</i>	Secure	N/A	N/A	X
Mountain Whitefish	<i>Prosopium williamsoni</i>	Secure	N/A	N/A	X
Northern Pike	<i>Esox lucius</i>	Secure	N/A	N/A	X
River Shiner	<i>Notropis blennioides</i>	Undetermined	N/A	N/A	X
Sauger	<i>Sander canadensis</i>	Sensitive	N/A	N/A	X
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	Secure	N/A	N/A	X
Silver Redhorse	<i>Moxostoma anisurum</i>	Undetermined	N/A	N/A	X
Spottail Shiner	<i>Notropis hudsonius</i>	Secure	N/A	N/A	X
Trout-Perch	<i>Percopsis omiscomaycus</i>	Secure	N/A	N/A	X
Walleye	<i>Sander vitreus</i>	Secure	N/A	N/A	X
White Sucker	<i>Catostomus commersonii</i>	Secure	N/A	N/A	X

## **Appendix C**

### **EIA Determination Letter from ESRD**



September 19, 2013

Lori Nickifor  
Senior Manager, Environmental Services  
Health, Safety, and Environment  
Capital Power Corporation

Dear Ms. Nickifor:

Further to your e-mail of September 13, 2013, I wish to advise you that pursuant to Section 44 of the *Environmental Protection and Enhancement Act* (EPEA), I have considered the application of the environmental assessment process to your proposed Genesee Generating Station Units 4&5 Project. This activity is not a mandatory activity for the purposes of environmental assessment. Having regard to the consideration set out in Section 44(3) of EPEA, I have decided that further assessment of the activity is not required. Therefore, a screening report will not be prepared and an environmental impact assessment report is not required.

Please note that this decision is based on the current information about the project and that I reserve the ability to review this decision should different and/or new information come to light. Capital Power Corporation should also note that Section 47 of EPEA gives the Minister of Environment and Sustainable Resources Development the authority to order the preparation of an environmental impact assessment report under appropriate circumstances, notwithstanding a director's decision to not require an environmental impact assessment report.

Capital Power Corporation should be advised that although an environmental impact assessment report is not required for this project, Alberta Environment and Sustainable Resource Development may have other regulatory requirements under EPEA and/or the *Water Act*. For more information about regulatory requirements under EPEA and/or the *Water Act*, please contact Steve Cook ([steve.cook@gov.ab.ca](mailto:steve.cook@gov.ab.ca)).

Capital Power Corporation should also note that Alberta Environment and Sustainable Resource Development's section (Part III) of the *Government of Alberta's First Nations Consultation Guidelines on Land Management and Resource Development* may apply to this project and accordingly, Capital Power Corporation may be required to submit a First Nations Consultation Plan to the department. For more information about the First Nations consultation process, please contact Darcy Evanochko ([darcy.evanochko@gov.ab.ca](mailto:darcy.evanochko@gov.ab.ca)).

Capital Power Corporation should also contact Shauna Sigurdson (780-495-2236) with the Canadian Environmental Assessment Agency to discuss the potential submission of a federal project description and any federal environmental assessment requirements under the *Canadian Environmental Assessment Act, 2012*.



If you have any questions or need further information please contact me at 780-427-9116.

Sincerely,

<Original signed by>

Corinne Kristensen  
Acting Environmental Assessment Team Leader  
Provincial Programs  
(Designated Director under the Act)

cc: S. Sigurdson (CEAA)  
Steve Cook (ESRD)  
Darcy Evanochko (ESRD)  
M. Daneluk (ESRD)